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040612 #35



USER EXPERIENCE



## SMARTPHONE BUYER'S GUIDE



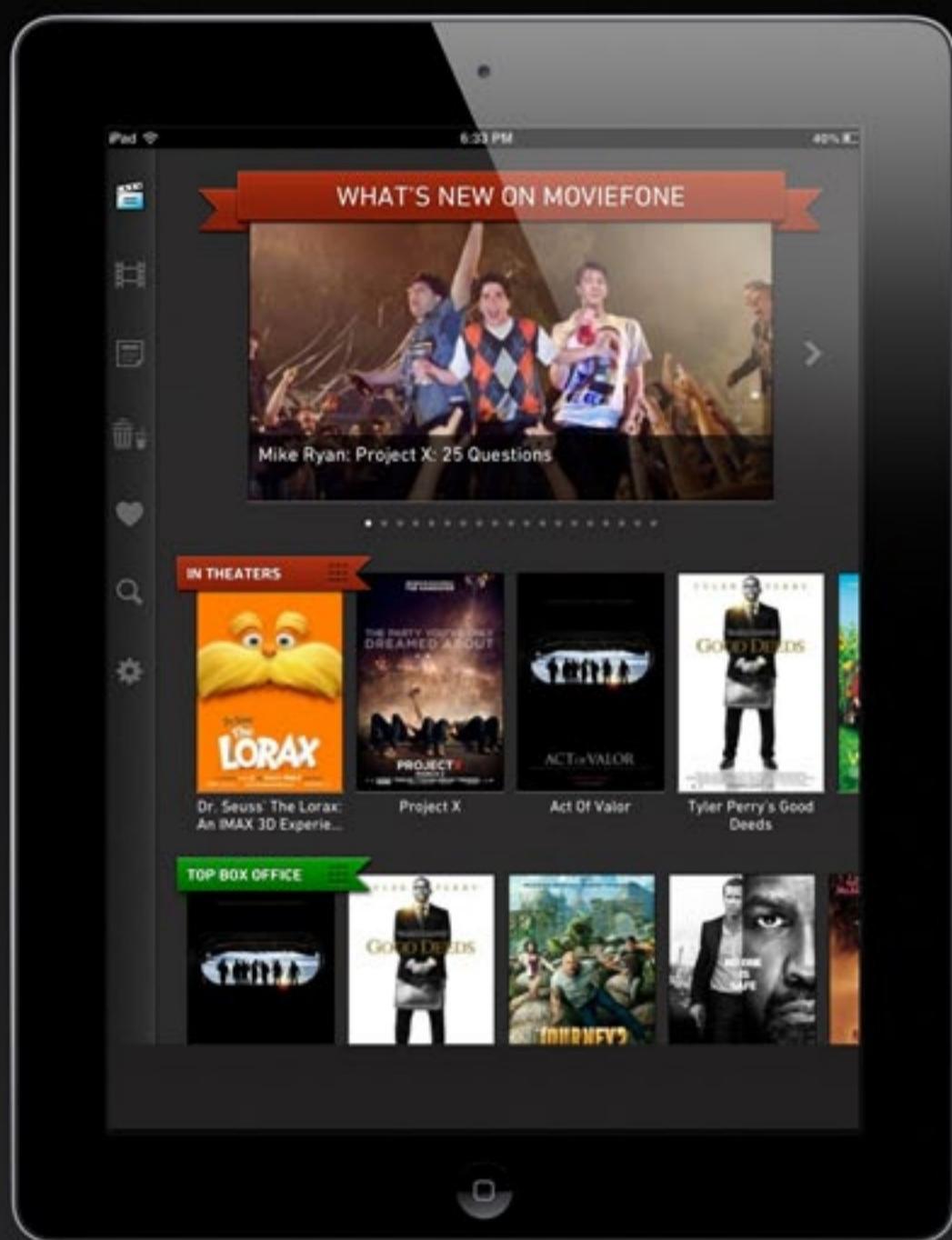
*Spring 2012 Edition*



HTC'S ARMY OF ONES ★ NOKIA'S LUMIA 900 ★ FROKNOWSPHOTO'S JARED POLIN

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## SMARTPHONE **BUYER'S GUIDE**



By Zachary Lutz

# More Film Filters on More Phones

## *Editor's Letter*

If you've ever had the pleasure of listening to our esteemed Managing Editor, Darren Murph, on the podcast you know of his affinity for declaring the relative success of a given mobile platform based on whether or not it offers Instagram. He can now mark one more platform as a sure-fire success with the release of that very app on Android. The Instagram team called it "one of the most eagerly anticipated releases on the Android platform to date," and that is one claim that we can't deny.

I confess, I'm not much of an Instagram user, largely because I'm an Android user and haven't had easy access to the app in the past, but I get the appeal and am glad to see another missing link completed in the Android Market. (Which, by the way, I'm still struggling to call Google Play.)

Sprint and HTC unveiled a new flavor of the epic One X smartphone destined for Big Yellow's airwaves. Sadly, it will now be known by a rather more-clunky name: the HTC EVO 4G LTE. It packs the same 1.5GHz dual-core Snapdragon S4 chipset found in the AT&T flavor and the same 4.7-inch 720p display. Interest-



ingly, it's still offering LTE, too, which could make it one of the first on that network to support non-WiMAX 4G. Sprint still hasn't flipped the switch on its own LTE network, but this device's anticipated release in Q2 might give an indication of when that'll happen.

With April Fool's falling on a weekend, the usual flush of inanity was tempered somewhat from the ridiculous heights it enjoyed last year, but there was still plenty of tomfoolery to go around, the majority perpetrated by Google. It's like the company couldn't decide on one really great prank so it just went with the lot its engineers proposed. Far and away, my favorite was an 8-bit "Quest" version of Google Maps for the Nintendo Famicom (NES in the US). Google seemingly got so excited about it that it went live the afternoon before.

Google also announced its entry into NASCAR with a self-driving addition to that racing series, introduced by Sergey Brin doing hands-off donuts. There was Google Tap, a Morse Code-like system for text entry, with LL Cool J (supposed "Product Lead") describing all the places that users could "tap it." Then there was a DVD subscription service for You-

# Terrafugia showed off its Transition “flying car,” but was quite adamant about the thing *actually* being a plane you can drive

Tube, a dual-wielding Chrome Multitask Mode, and finally the Google Fiber Bar, intended to drastically increase one’s regularity.

Moving back to real news, sometime in February, China picked up its one-billionth mobile phone user. Yes, one billion. In other words, there are three times more mobile phone subscriptions in China than there are *people* in the US. Now you can see why manufacturers are tripping over themselves to try to be major players in this still fledgling market.

Back in New York, it’s time for the NY International Auto Show. It’s one of the quieter gatherings of the automotive world, but we still saw some interesting things there. Fisker unveiled its Atlantic, the former Project Nina, another “electric vehicle with extended range” thanks to an onboard generator. It’s slightly smaller than the Karma, which has been making so much news lately — and for all the wrong reasons. The Atlantic is said to be drastically less expensive, priced roughly the same as an Audi A5, which could make it half the cost of the \$102,000 Karma.

Terrafugia showed off its Transition “flying car,” but was quite adamant about the thing *actually* being a plane you can drive. One look at it in the (carbon fiber) flesh makes it clear that flying is the primary intent, the idea not really being you’d actually want to drive this thing around all the time, more so that you can save on hangar fees (upwards of \$1,000 a month) by driving your Transition home. And, at \$279,000, owners will probably be looking to recoup that cost however they can.

We also got a chance to look at the new CUE system coming to Cadillac’s new XTS, ATS and XRS autos this year. It’s not too dissimilar to the MyFord Touch system that the Blue Oval has been struggling to make its users want, but if anything it’s slightly less intuitive to use, which is troubling. Mercedes also showed off a full 360-degree birds-eye perspective in its cars, which uses a series of cameras with wide-angle lenses to create an overhead view of the car that pops up on an LCD on the dash. It makes parallel parking your gigantic German auto easier than ever.

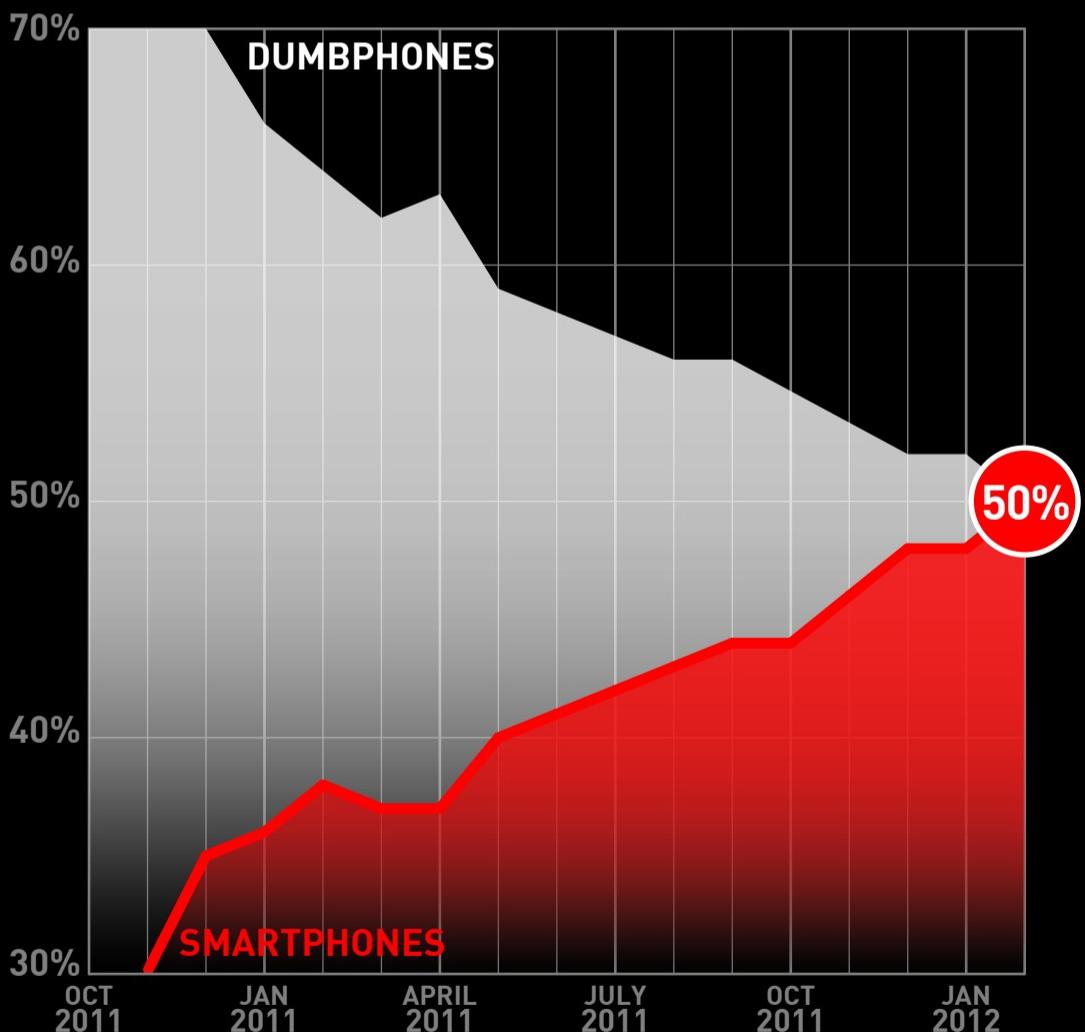
In this week’s Distro we’re going to help those of you with expiring contracts figure out where to turn next. Regardless of carrier, our Zach Lutz has a suggestion for you. If you’re looking for the latest and greatest, of course, you may be interested in HTC’s new One series. If so, we have reviews of the One X and One S this week, plus a full overview of HTC Sense 4.0. Those who like the dark horse will want to read Joseph Volpe’s review of Windows Phone’s greatest entry yet, the Nokia Lumia 900. We also have more Recommended Reading, a new IRL installment, Q&A with FroKnowsPhoto’s Jared Polin and a new comic from Dustin Harbin. Yes, that’s a lot of beautiful smartphones, so make sure you put your tired old cell phone somewhere safe before diving in. We wouldn’t want it to get jealous.



TIM STEVENS  
EDITOR-IN-CHIEF,  
ENGADGET

# US Mobile Phone Buyers Make the Smarter Choice

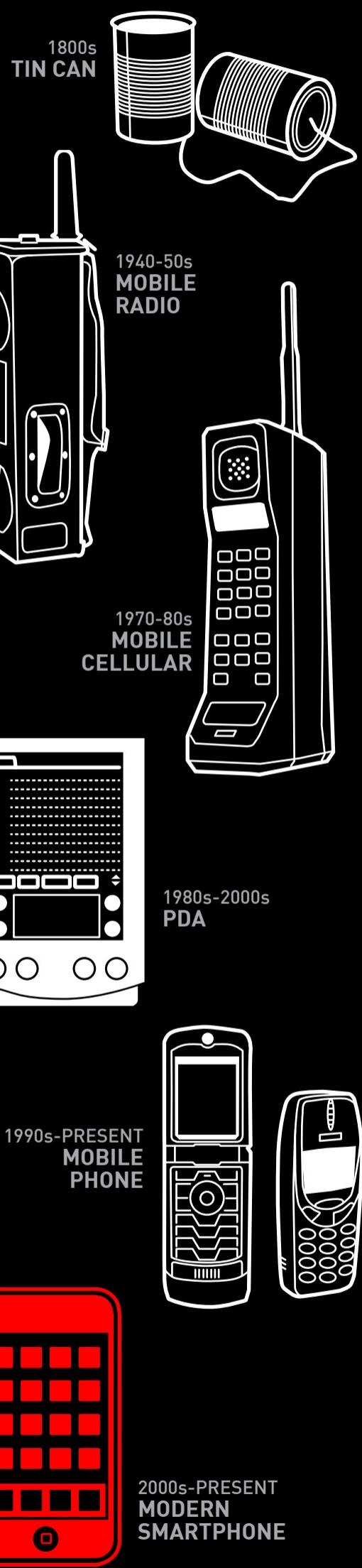
**Nielsen Mobile Insights'** latest statistics are in — and would you look at that? It's the rise of smartphone owners crossing paths with the decline of those still clinging to their feature-focused devices. According to its latest Smartphone Penetration report, through February 2012, 49.7 percent of US mobile phone owners now sport the "smarter" types (up from only 36 percent a year ago). On an unsurprising note, Nielsen also found that two-thirds of mobile phone buyers in the last three months purchased smartphones over dumbphones. According to its latest report on Smartphone OS shares, of those smartphone purchases, 48 percent of buyers went with Android, 43 percent landed iOS a close second and five percent helped RIM scrape the bottom of the barrel with the remaining four percent listed as "other." That said, it's only a slight deviation from January's numbers, when 51.7 percent of folks went with Android, while 37 percent took the route leading to Apple. — *Joe Pollicino*



SOURCE: NIELSEN

*The Weekly Stat*

## AN ABRIDGED EVOLUTION OF THE SMARTPHONE



# NOT WEANED FROM WINDOWS

*Switched On*



BY ROSS RUBIN

The recent announcement that Dell would not be pursuing new smartphones following the retirement of its Venue Windows Phone devices raised the spotlight on PC companies – at least those other than Apple – and why they have struggled so mightily in the US smartphone market. Virtually every major PC company, including HP, Dell, Acer, Lenovo, Toshiba and ASUS, has either passed completely on entering the domestic market or released only a handful of models without much carrier support behind them. HP, of course, made the largest investment in mobile with the purchase of ailing developer of devices and operating systems. But even before that Palm slapped its forehead, HP had only casually flirted with smartphones, releasing a few token Windows Mobile handsets.

To be fair to these companies, the investment demands of the ultra-competitive smartphone market have proven formidable for many, including companies like Motorola, Nokia and RIM, that were once considered masters of the game. Even those that have not seen such a prolonged decline, like HTC, can find the tables turned on them in the course of a financial quarter.

But PC companies have been fighting the battle with some heavy handicaps.

## The Channel

PCs are sold through many channels; three of the most important are big-box retailers, direct sales and value-added resellers. These channels are much less of a force in the smartphone market, where most of the distribution is through carrier stores and their agents. The flip side of this is that smartphone companies haven't done well in the tablet market in part because those products have been distributed through more PC-focused channels. PC makers are used to listening to the demands of enterprise

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Ross Rubin (@rossrubin) is executive director and principal analyst of the NPD Connected Intelligence service at The NPD Group. Views expressed in *Switched On* are his own.

customers and consumers in aggregate, but that's a far cry from customizing products for the demands of carriers.

### The Chips

The PC chip market is essentially a duopoly of Intel and AMD, which limits PC OEM choice. In contrast, the smartphone market has a broader range of ARM licensees. Not only are there NVIDIA, Qualcomm and Texas Instruments to name three leaders, but a few major smartphone providers such as Apple and Samsung use their own ARM customizations. Such competition helps to create lower prices, but it also means more tradeoffs from which to choose and more optimizations to really take the best advantage of particular architecture.

### The Chops

While fast compared to the consumer electronics sector, the PC market has longer product development times than the fiercely competitive smartphone market. And while being freed from Microsoft's dictatorial terms might have PC makers celebrating, the old cliché of freedom not being free applies. Google offers less support – technologically and financially – to most hardware developers than Microsoft offers to giant customers such as HP and Dell. Of course, one alternative is to build or acquire an alternative operating system. The former option, though, is extremely expensive and risky. And the latter didn't pan out well for HP.

**While being freed from Microsoft's dictatorial terms might have PC makers celebrating, the old cliché of freedom not being free applies.**

Will the fortunes ever change for PC makers in the smartphone market? While Windows Phone may not be the same thing as Windows, Microsoft would be all too eager to see HP and Dell become high-volume shippers of these devices. As Windows 8 bears more in common with the Windows Phone user interface and creates other ties, PC makers gain more of an advantage than they've had in the past. Microsoft may need the likes of Nokia and Samsung to get the bandwagon rolling for Windows Phone, but it's the easiest one for PC makers to hop aboard if it can get rolling. □



# Death of a Data Haven: Cypher-Punks, WikiLeaks, and the World's Smallest Nation



by James Grimmelmann  
*Ars Technica*

**Longtime readers** of *Wired* will no doubt remember the story of HavenCo, a would-be offshore data haven that promised to set up shop on a World War II-era antiaircraft deck known as the “Principality of Sealand.” More recently, Sealand was back in the news as a possible home for WikiLeaks — somewhere it could exist without the constant threat of being shut down. That prompted James Grimmelmann to dive into the issue again, and the result is this exhaustive piece for *Ars Technica*, which looks at the current state of Sealand and what went wrong with HavenCo.

## AROUND THE WEB

### 25 Years of IBM's OS/2

by Harry McCracken, *Time Techland*



On the 25th anniversary of its release, Time's Harry McCracken looks back at the history of IBM's OS/2 — an operating system that may not have taken off in the way IBM hoped, but which found a following and even remains in use in some surprising forms today.

### A True Bionic Limb

#### Remains Far Out of Reach

by Michael Chorost, *Wired*



Bionic limbs have been the stuff of science fiction for decades and the work of researchers for nearly as long, but, as *Wired*'s Michael Chorost reports, there are still some significant hurdles to overcome before those two visions are able to meet.

### The World According to DARPA

by G. Pascal Zachary, *IEEE Spectrum*



Today's bastion of innovation? According to *IEEE Spectrum*, it's not a tech giant but the Pentagon's Defense Advanced Research Projects Agency, otherwise known as DARPA — which, incidentally, just saw its director hired away by Google last month.

### Where's \_why?

by Annie Lowrey, *Slate*



A fascinating look at both the computer programmer known only as “\_why,” who vanished from the internet in 2009 and took most of his work with him, and the act of computer programming itself, which Annie Lowrey took up for the piece.

### Everything You Wanted to Know About Data Mining but Were Afraid to Ask

By Alexander Furnas, *The Atlantic*



Exactly what the title suggests: a primer on the process known as data mining, and a good one. Without getting too much into the weeds, Furnas breaks down exactly what it is, why it matters, and why it's here to stay.

## Recommended Reading



# HTC Sense 4

The latest version of Sense stays true to the spirit of Ice Cream Sandwich, and marks a major improvement to HTC's proprietary skin.

BY BRAD MOLEN

**Over the last year**, HTC has established a reputation for fragmenting its proprietary Sense UI even within the same version of Android. Why, Gingerbread alone is the foundation for at least three different iterations (2.1, 3.0 and 3.5) of the firmware. The bump to Ice Cream Sandwich is no different, with legacy devices getting an update to Sense 3.6 and the One series (and presumably any future devices) benefiting from version 4.0.

When we previewed Sense 3.6, we were disappointed at its similarity to previous versions and the sloppiness of its integration with key features in ICS. Even though it marked an improvement in functionality and performance, it seemed as if the OS and customized UI were at war with each other.

Sense 4 is a different story. It's lighter, cleaner and much more visually appealing than older versions of the user interface, and it has the full suite of ICS goodies to go along with it. HTC also throws in its own imaging technology, dubbed ImageSense, to offer some cool new enhancements to the camera. Ultimately, HTC has successfully tweaked Sense's design in a way that keeps the spirit of stock Android 4.0 alive, while still offering something familiar to loyal HTC fans. The tour is about to begin, so park yourself in your favorite chair and join us.

## Home Screen

The home screen of Sense looks like, well, a slightly modified version of Sense. As silly as that sounds, HTC didn't break a lot of new ground here. Perhaps the company figured this was a great way to help ease customers into the transition from yesteryear to the new era. Unlike stock ICS, as seen on the Samsung Galaxy Nexus and Nexus S, Sense 4 doesn't feature the non-removable Google search bar at the



top of every panel (though it's offered as a removable widget by default), and it also lacks a virtual row of navigation buttons on the bottom of the display, since HTC opted to use three capacitive keys on the One series instead. We can't just assume that this means the manufacturer will never try the virtual buttons on for size, but it seems rather unlikely at this point.

Even though the virtual buttons aren't offered on Sense 4, HTC still made sure to throw in an ICS-style launch bar along the bottom of the screen, with app menu access flanked by up to two customizable app shortcuts on either side. You can choose whatever app you want — heck, you can even toss in a folder if that's what really moves you. The launch bar's also a tad different here than it is on 3.6, since it's chopped off on each side and uses only one color tone (in contrast to

a two-tone black and grey motif). This means there's a little extra space in the two bottom corners; it's not enough real estate to take advantage of, but it lends a greater feeling of minimalism, as well as a cleaner appearance.

The signature clock / weather widget is still there, eating up the entire top half of the screen, but it has a more modern look to it. The massive dark grey box that serves as the backdrop for the entire widget is gone, which makes it seem less intrusive somehow. And, as always, you can simply remove the widget if it's taking up too much space. Easy enough. It's not like you'll be hurting for clock options, considering HTC spared no expense by throwing in a wide variety of possible widgets to choose from. Good news: the 3D carousel in older versions of Sense that spins your main panels around and around like you're playing the Wheel of Fortune? Retired.

## THE 3D CAROUSEL IN OLDER VERSIONS OF SENSE? RETIRED.

Another Sense staple that's sticking around for the long haul is the overview screen, which gives you a card-style view of all seven home panels. It's still accessible by tapping once on the home capacitive key or using pinch-to-zoom, and once you arrive here you'll be able to change the panel order and even add or remove unwanted screens. This comes in handy if you're looking to avoid clutter.

Finally, long presses have changed a bit. For instance, performing this ges-

ture on the capacitive keys no longer does anything. Doing it on one of the home panels, however, takes you into a modified screen with a layout that emulates what you'd see if you did the same thing on a Honeycomb tablet: it pulls up a menu that shows thumbnails of your main panels on the top, tabs for widgets, apps and shortcuts on the bottom and a section in the middle that allows you to choose from a variety of options related to whichever tab you've selected. When looking at widgets, for instance, you can use a drop-down menu or do a search to quickly find something specific. This part of Sense seems to take advantage of the ICS design style, but the screen itself is nowhere to be seen on the stock version.

## Personalization Options

Also predominant in past versions of Sense has been the personalize menu, which was featured as a non-customizable shortcut on the launch bar. Essentially, this screen was an extension of the settings app, with several options for display, sound and shortcuts. It's still around (minus the shortcuts option, since you can find that by long-pressing the home panel), but it seems to have lessened in priority now. How can we tell? The only points of access to this screen are in the settings itself and as a shortcut in the app menu that can be added to whatever spot you want it to go. But that's the key: you can do whatever you want with it. Freedom to choose. No longer is this menu stuck on your home screen without any way of removing it.

## Notifications

When it comes to staying true to stock ICS, the notification bar in Sense 4 may not be a direct copy, but at least it gets much closer to the general idea than 3.6 does. Individual lines take advantage of the original style, and you can swipe each one to the left or right to get rid of them. And just like the pure vanilla version, you can find buttons to clear notifications and access settings on the top, but HTC pushes them over to the top right corner and adds words to each symbol, helping you understand exactly what each one is there for. Instead of going the same route as Sense 3.6, which offers a section for recent apps near the top and a quick settings tab at the bottom, the outfit kept only one tie to earlier versions of the user interface: it keeps ongoing processes and one-time notifications separate.

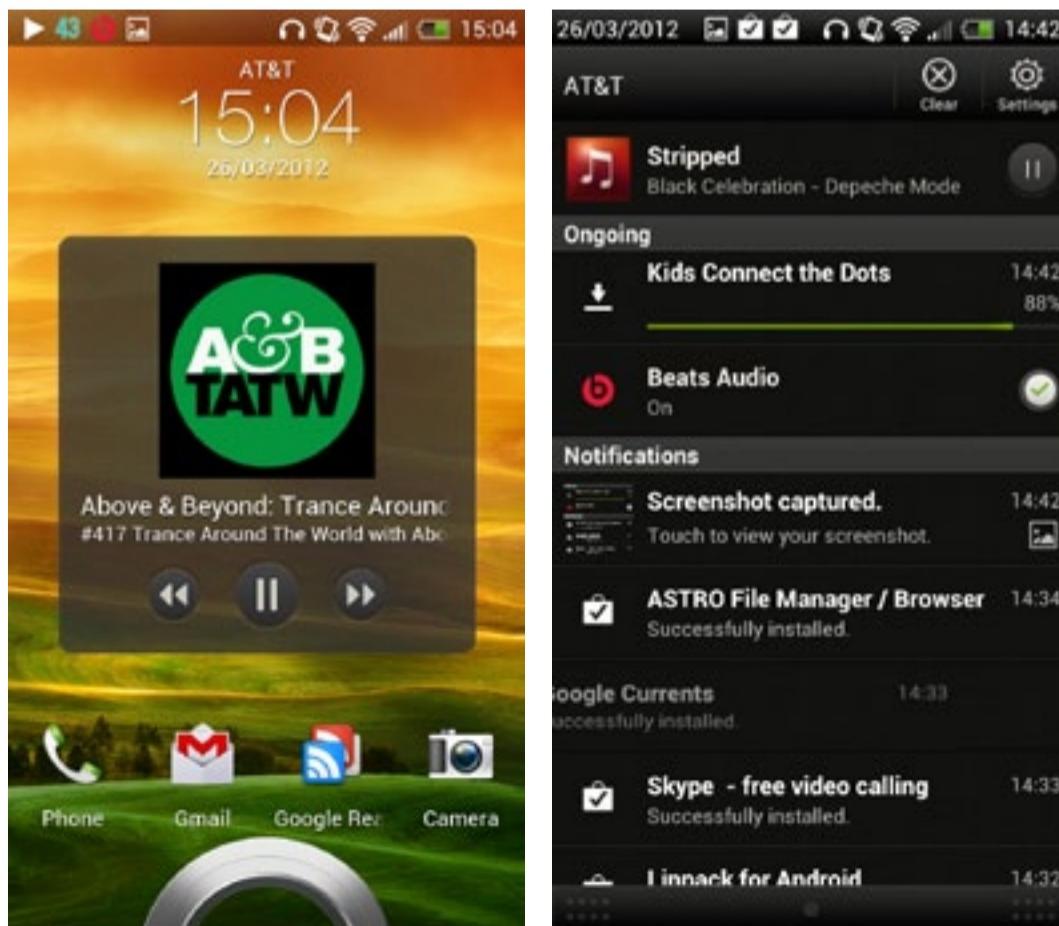
## THE NOTIFICATION BAR IN SENSE 4 DOES A MUCH BETTER JOB OF EXEMPLIFYING THE SPIRIT OF STOCK ICE CREAM SANDWICH.

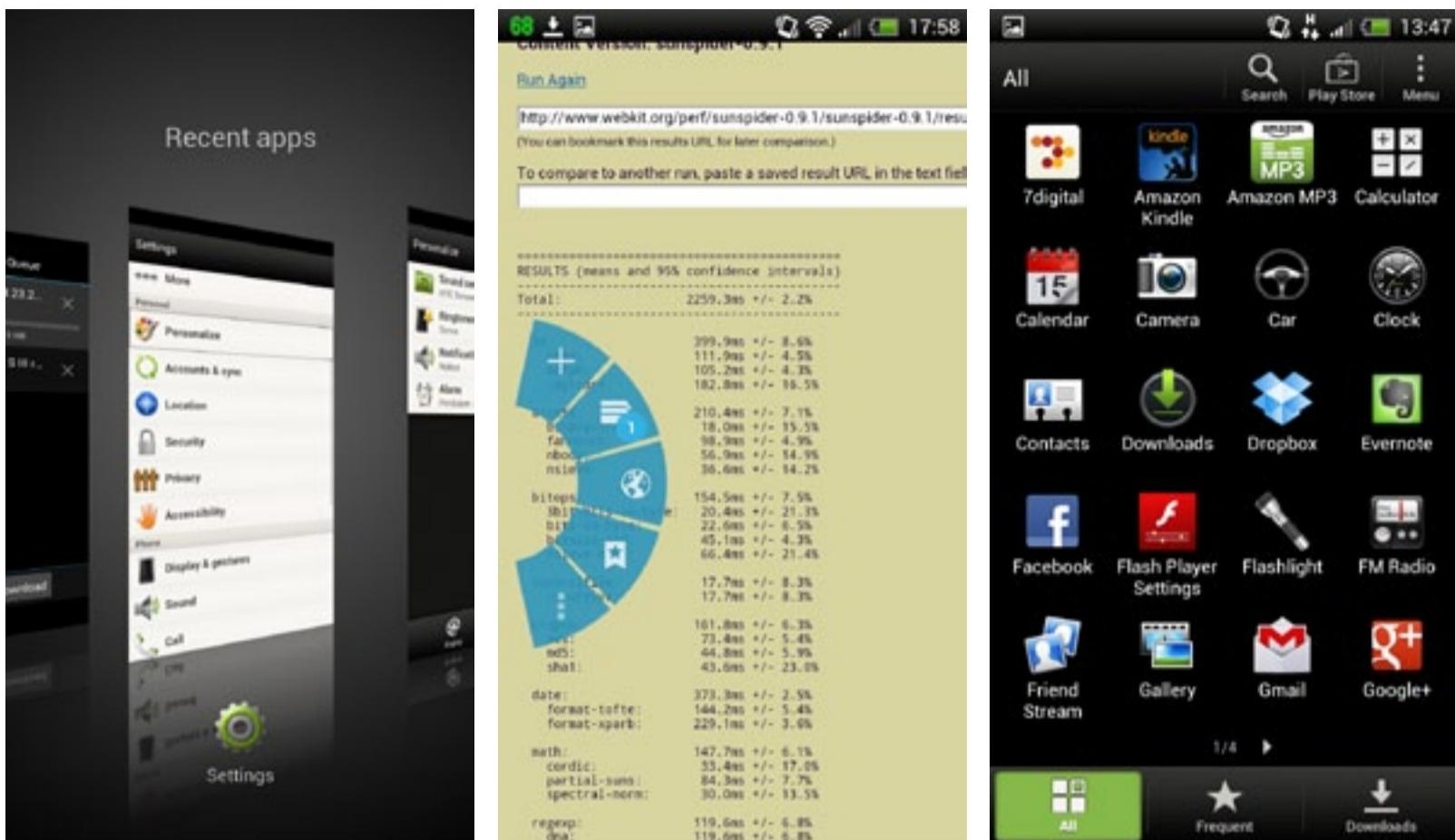
The new version of HTC's user interface also throws in extra choices for viewing notifications. Not only can you pull down the bar to see the full list without even unlocking the phone — standard for Ice Cream Sandwich — you can also choose a new lock screen style that lets you view a small selection of notifications directly on the lock screen. You can view missed calls, messages, email (from the standard Mail client, but not Gmail) and calendar events this way. What's more, you'll be able to pick and choose specifics: display missed calls from Bob only, view calendars A and

C but leave out B, show messages from your wife. We have no idea why Bob's calls would be more important than your spouse's, but you certainly have that option at your disposal should you so choose.

## Lock Screen

The standard Face Unlock feature is available, as is the standard Sense ring and accompanying quick access shortcuts at the bottom. The apps featured here will ultimately reflect whatever you have hanging out in your launch bar, regardless





of what it is. And since you can choose the number of apps you have laying on the bottom of your home panel, this means you can have anywhere from zero to four shortcuts to choose from.

Just as with vanilla ICS, you can pull down the notification bar directly from the lock screen. And if that's not quick enough access for you, it's not a bad idea to choose the "productivity" lock screen style mentioned earlier. Calendar events and changes in the weather will also pop up from time to time, and it's easy enough to simply dismiss them and get those notifications out of your way.

## App Menu

Unlike Sense 3.x, version 4.0 adopts the appearance of Matias Duarte's horizontal app menu, but you'll notice one significant difference right off the bat: no widgets. Those can still be accessed by

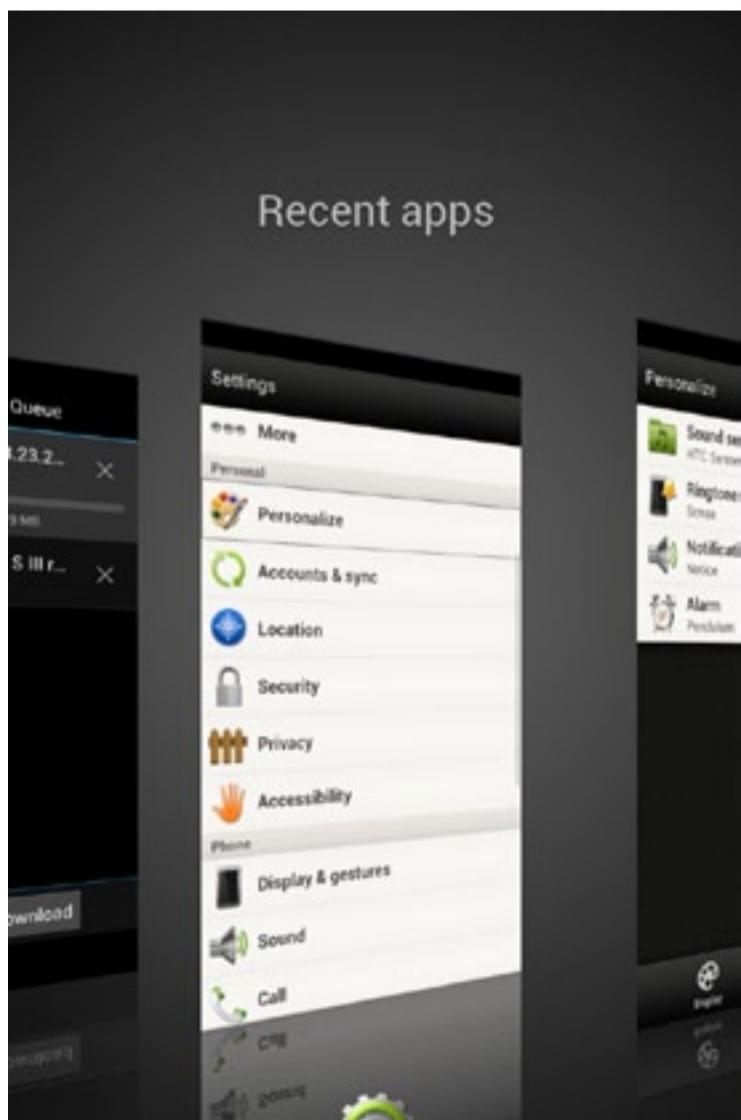
long-pressing the home panel screen, as we discussed earlier, and that's the only place you can find them. We assume this decision was made to avoid possible confusion when switching back and forth between apps and widgets, but it's a significant enough departure from the true ICS setup.

In the top right corner you'll have a search button, Play Store access point and options menu at your disposal. Within the latter you can find the ability to manage, share or sort your apps. There aren't many options to customize the app menu — you won't be able to move the icons around to fit your liking, but you at least still have more flexibility with Sense than the vanilla OS. Also, tucked between the icons and tabs is a menu progress indicator that tells you exactly where you are in the potentially vast expanse of app screens.

Last but not least, HTC has made it possible to edit the tabs lining the bottom of the app menu. If you've played with earlier versions of Sense and couldn't stand the frequent or download tabs, you can remove them on 4.0 simply by going into the app menu options on the upper right corner of the screen and clicking on "edit tabs." Boom goes the dynamite. If you like your tabs but hate the order they're displayed in, you can rearrange them however you'd like. The best part is, that this isn't the only part of Sense that allows this — a plethora of apps within the UI now offer the same ability. Customization FTW.

## Multitasking

The multitasking (or "recent apps,"



if you prefer) menu is different. Very different. HTC's design choice took us completely by surprise, because it opts for a card layout that's actually closer in function and appearance to webOS and Windows Phone 7.5 than what we see in stock Ice Cream Sandwich. Each open application is presented as a card, and the entire series of apps is displayed in a horizontal setup that looks like it was inspired by Cover Flow. The slide to close feature is still around, but you flick the card up to get rid of it. We can't help but be reminded of webOS every time we use it.

**MULTITASKING ON SENSE 4 IS MUCH CLOSER TO WEBOS OR WINDOWS PHONE MANGO THAN ICE CREAM SANDWICH. IT'S BY FAR THE BIGGEST DEPARTURE FROM ANDROID YOU'LL FIND IN SENSE.**

While we enjoyed this method on webOS, seeing HTC adopt it on its Android devices is a bit of a letdown. One of our beefs with previous versions of Sense is that the UI is so *involved*, so overbearing, that it often takes you away from feeling like you're even using Android in the first place. HTC has sought to eliminate much of that same concern in its latest firmware and it largely succeeded in doing so by making the interface more closely resemble Matias Duarte's vision. The multitasking screen, however, is a gargantuan departure to that philosophy.

It functions well, but it's as if we're using a completely different OS. Here's where it gets even weirder: Sense 3.6, also considered to be a heavier, more "watered down" version of ICS, uses the stock app switcher.

## Browser

We have a feeling many ICS fanatics will shun the native Sense browser in favor of Google's own Chrome flavor, but there's still plenty to like about HTC's version — and it's especially beautiful on a high-performance phone like the One X, given how incredibly smooth it works. We had a very difficult time finding any lag, and tiling on the browser was practically non-existent. And just like the Galaxy Nexus, Sense's version scored a perfect 100 / 100 on the Acid3 test.

The native browser keeps many of the stock settings and adds a few of its own for kicks and giggles. Instead of throwing in extra stuff just for the sake of being different, however, the new features can actually become quite useful: a toggle switch to enable Flash, wireless printing (not new to Sense, but it isn't on the vanilla ICS browser) and an "add to" option which lets you easily stash your current page on bookmarks, an icon on your home panel or a reading list — Sense's version of offline reading. Incognito mode is still there, but it takes you one additional step to pull it up; on Sense, it can only be accessed when you go through the action of adding a new tab.

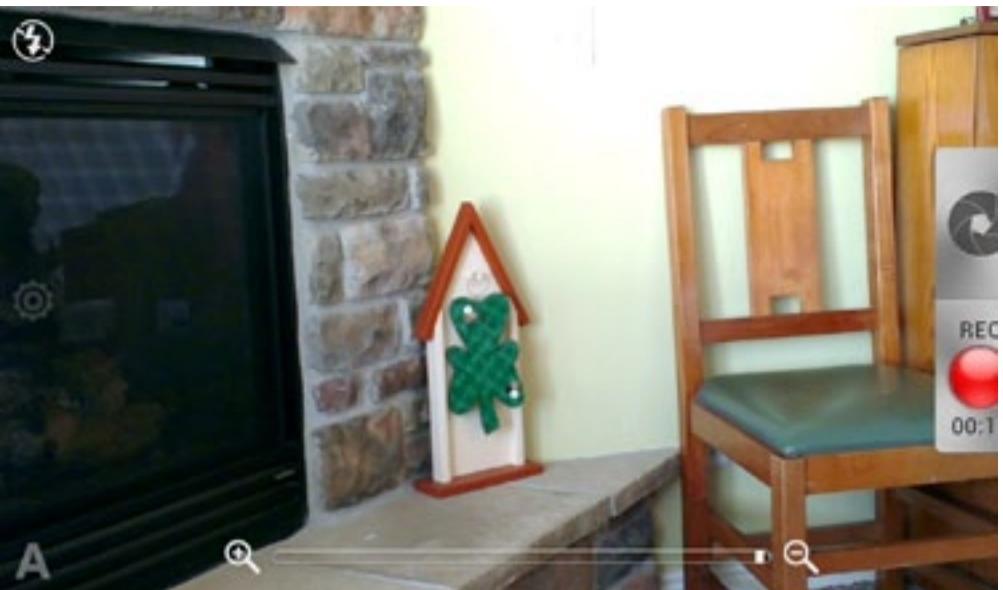
**THE QUICK ACCESS SHORTCUT MENU IN THE NATIVE BROWSER IS STILL THERE, AND HTC HAS ADDED A COUPLE MORE OPTIONS TO MAKE IT EVEN BETTER.**

Also retained in this version of the ICS browser is the clever labs feature in which a semi-circle with quick access shortcuts can appear simply by dragging your finger onto the screen from the left or right bezel. Sense, not satisfied with keeping it precisely the same as what you'd find on vanilla Android 4.0, has added two extra options. In addition to buttons for settings, window toggle and URL bar, it allows you to add a new window and go directly to your bookmarks. They're not crucially important, of course, but it is pretty handy.

## Camera

HTC has armed the cameras in its Sense 4 devices with a new weapon: ImageSense. This technology is made possible by integrating a custom chip and enhancing several other parts of the camera like the lens, sensor and software in general. While all of these elements are crucial to ensuring ImageSense works as advertised, we'll focus on the cam's user interface specifically.

With Sense 4, there are no more specific "modes" in which you need to access a toggle switch to move back and forth between still and video. Instead, both options are available to you to the right of the viewfinder, the two buttons hanging out together in peace and harmony



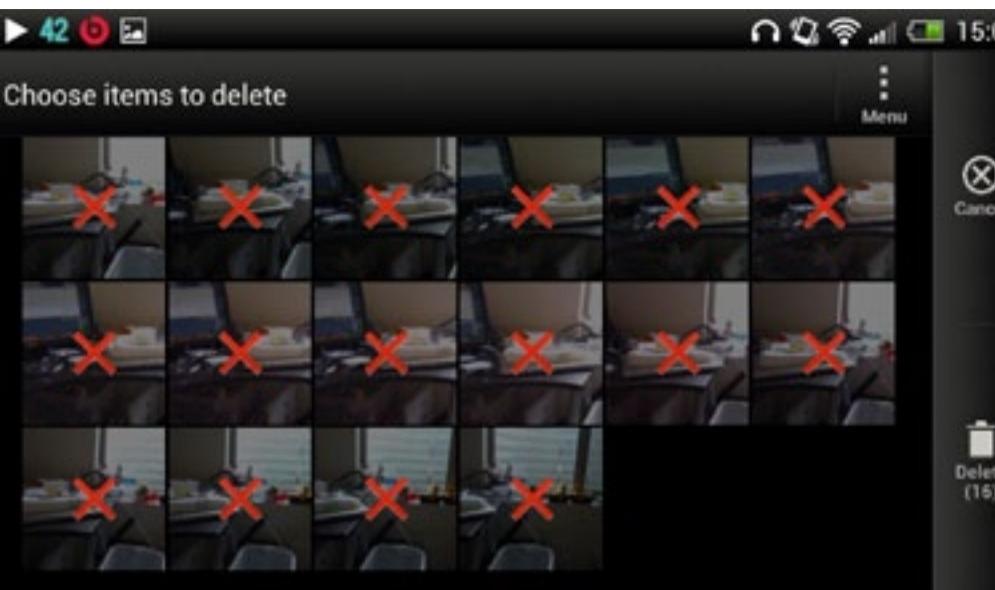
as one mode. We appreciate this setup because it's much more convenient when you need to quickly choose one or the other, such as when a precious moment is going on. Switching from still to video (or vice versa) ends up taking a few seconds you just won't get back, after all. But it's also structured this way to accommodate one of ImageSense's biggest features: the ability to take still pictures *and* videos at the same time.

The ability to do stills and videos at the same time is absolutely stunning, and very few manufacturers have chosen to offer a similar service (Samsung being one of them). It appears that stock ICS has this feature, but it looks as though manufacturers are still able to add it in or take it out of their custom skins — as evidenced by its absence in Sense 3.6. When you're recording video, the camera shutter button is still available just in case the moment is so memorable that you want to take an image without turning off the camcorder. If you forget to do this, all is well: it's possible to grab photos in the same manner after the fact. When you're watching the video

in the gallery, the same shutter button hasn't gone anywhere, still accessible on the right side of the screen. Before we get to the gallery, let's turn back to the main camera UI. In addition to the pair of shutter buttons to the viewfinder's right, you'll also see gallery access on the bottom corner, with an odd blue lens on the top. The blue lens, when pressed, shows you a menu of different effects and modes to take advantage of: depth of field adjust, distortion, dots, vignette, vintage and the usual suite of grayscale, sepia, negative and others are all there. These aren't anything new to the Sense UI, but you definitely won't see them in stock ICS.

### **IMAGESENSE'S ABILITY TO DO STILLS AND VIDEOS AT THE SAME TIME IS ABSOLUTELY STUNNING.**

The opposite side of the screen reveals three options: settings, flash mode and camera scenes. You get the usual HTC smattering of settings, such as resolution, ISO, white balance, exposure / saturation adjustments, face detection, video stabilization and so on. Continuous shooting — which lets you hold down the shutter button to fire off a machine gun-style round of images — is also available as a toggle here. Moving on to camera scenes, there's plenty to choose from. Panorama, landscape, low light, HDR and slow motion are a few examples of various options here. Also, the bottom of the viewfinder offers a



slider for zoom in / out.

A few more words on continuous shooting. One of the biggest feature enhancements in the new Sense is speed: first you'll notice the 0.7-second startup and a 0.2-second autofocus. Then, by holding down the shutter button, you'll be able to rapidly fire off a full series of continuous shots for as long as you'd like (though there is a setting in which you can choose to limit the number of captures to twenty). When you've completed your series, you're automatically taken into an album-within-an-album in which you can look at each individual shot that you captured and pick and choose whichever ones don't fit the bill. Or, you can choose to keep just your favorite shot and delete all the rest.

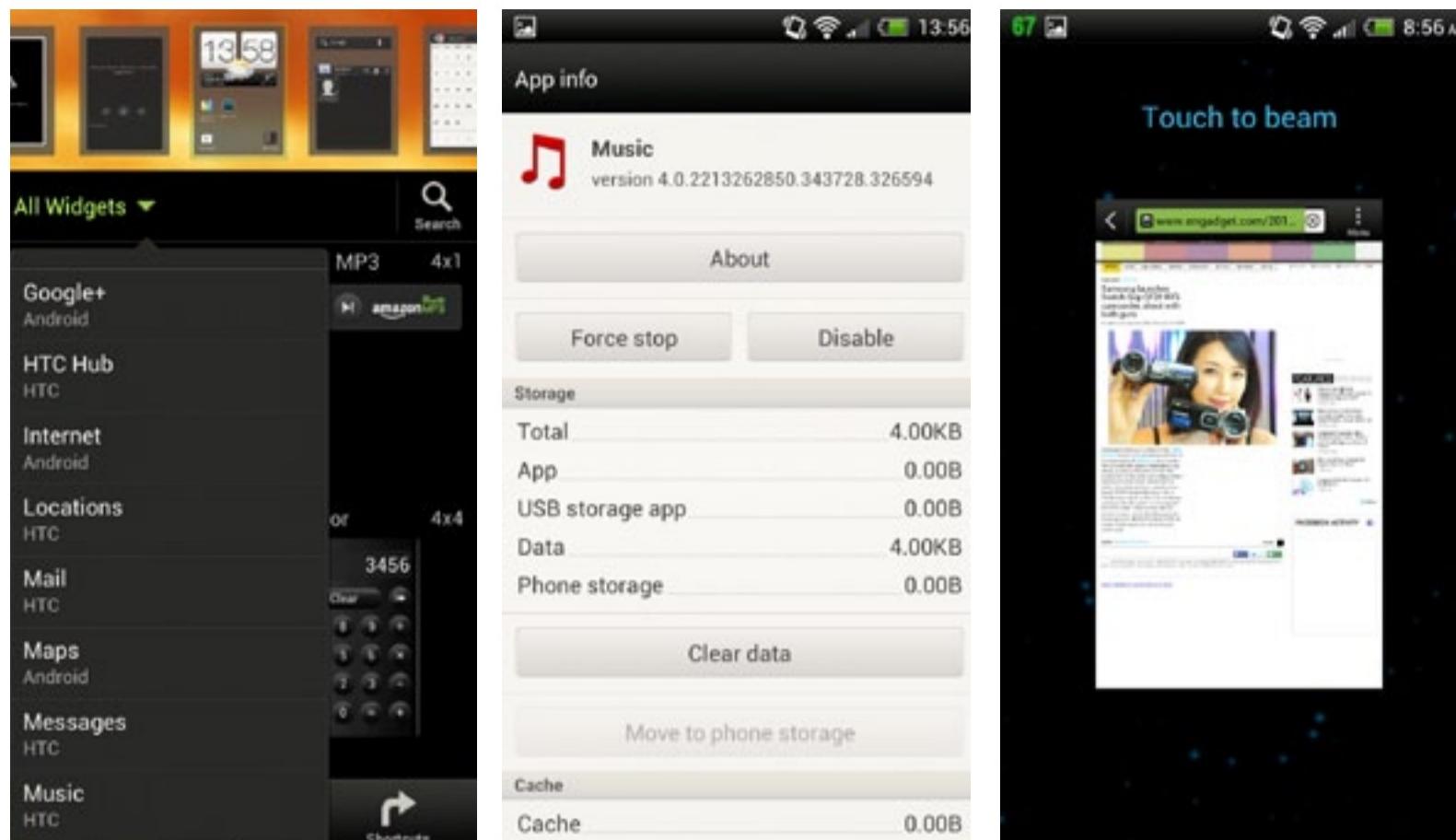
Now, the gallery. We already mentioned the shutter button that's available when you're previewing a video, but what about the rest of the options? On the top right you can adjust volume and brightness. The bottom left reveals a share button, where you can choose to export the video to several possible apps. Along the bottom is back

/ forward / pause and play, as well as a slider to fast forward or rewind your current selection. Finally, the bottom right corner offers a "more" button that gives you more choices. You can go here to find a Beats toggle, go into full screen mode, lock controls or trim the video (although anyone looking to do more with their movie can use Sense's movie editor app).

With Sense, you have the standard photo album view in the gallery, but you can choose to hide certain ones that you don't want to look at or let someone else see by accident. When going into an album, you'll first see the full layout of the images along with options to share, delete or even play the whole thing as a slideshow. When you go into an individual image, you can edit the specific picture, set it as your wallpaper, share it or print. And just like previous versions of Sense, if you begin flipping through the album the pictures turn into smaller thumbnails and scrolling between each one becomes much faster. This comes in handy if you have a plethora of photos to scan through and want to save extra time.

## Miscellaneous

**NFC / Android Beam:** Naturally, this little bit will only apply to HTC devices that offer NFC functionality, but Sense 4 does indeed support Android Beam — and on the One X, it works flawlessly. We were able to share URLs, directions, apps, contacts and even YouTube videos with our Galaxy Nexus without incident.



We were also able to download Google Wallet directly from the Play Store, but carrier restrictions still apply.

**Keyboard:** HTC loves its virtual keyboard so much that the layout remained nearly identical, with the exception of a standard set of arrows on a fresh row at the bottom. This means if you weren't a fan before, nothing's going to change your mind now. Of course, part of the beauty of Android is the fact that you can simply download a new keyboard and use it instead, so this really isn't a make-or-break factor when you're thinking of purchasing a device. On a positive note, we were quite pleased to see the trace functionality still baked into the Sense keyboard, and it worked brilliantly.

**Calendar:** Sense's calendar is colorful and easy to read. You can view multiple calendars and incorporate tasks, contacts, birthdays, Facebook events and more. The weather for the city of your

choosing is spread out across the top of each individual day, but if the daily layout isn't for you, just touch one of the tabs at the bottom to switch to week, month and agenda views.

**Phone:** The layout is very much what you'd come to expect from Sense, but a few elements have been tossed around to make room for uniformity with other parts of the UI. For instance, tabs now run across the bottom of the app and the rest of the keypad has shifted up the screen to make room for them. Two of them — groups and call history — can fortunately be removed if necessary. What can't be taken away, though, are the phone and contacts tabs.

**Beats Integration:** HTC must have received a lot of complaints from customers upset that Beats Audio couldn't be used in third-party apps, because the company added the functionality into Sense 4 and used it as one of the update's

key talking points at Mobile World Congress in February. While only certain legacy devices (such as the Vivid) will get the feature alongside version 3.6, every phone or tablet bearing 4.0 will likely boast this capability. We checked it out on the One X, and were indeed able to take advantage of Beats on several third party apps.

**Widgets:** Most widgets made available by Sense 4 aren't all that different from any other HTC device that has come before it. There are a few native Android widgets scattered about, but be prepared to wade through a much larger sea of available options with Sense than you would have on pure ICS.

**Disabling Apps:** Not every app or process can be disabled in Sense, and there doesn't appear to be any rhyme or reason to which ones are affected. The camera app and bluetooth share can't be disabled, for instance, but the dialer and contacts apps can. With that said, there are still plenty more options to get rid of stuff on Sense 4 than any Gingerbread-running version.

**Dropbox:** The One series is lacking in expandable storage, but we'll give HTC credit for trying to come up with a solid alternative method to make up for it. The Taiwanese company has once again partnered with Dropbox to hook you up with 25GB cloud storage space when you're rockin' on a Sense 4 device. This is more than plenty of real estate for many people, and it's most likely sufficient if you've been taking advantage of other cloud services or streaming music

options such as Google Music, Spotify or anything else. Our primary concern here isn't a matter of running out of space; it's the fact that nearly all of these services end up becoming a huge drain on capped data. If you don't have unlimited, you'll want to be incredibly picky about how much you listen to on a regular basis.

As a sidenote, we're unsure if you can still get the same amount of storage via Dropbox if you port the new Sense firmware onto an older device, but we'd love to find out from any aspiring devs who want to give it a shot.

**Clock:** Gone is the desk clock tab, and the world clock has undergone a makeover. While the same clocks are still there, they've been restricted to the bottom half. Taking its place on the top section of the screen is a Google Earth-style globe that can be rotated, tilted and zoomed, all the while displaying weather conditions in major cities as you go. Nearly all of the other tabs within the app have barely changed, with only slight variations in style.

## YES, VIRGINIA, SCREENSHOTS ARE INCLUDED IN SENSE 4.

**Screenshots:** Yes, Virginia, screenshots are included in Sense 4. Hold down the power and volume down buttons and, kapow! The shot is stored in your gallery, and you can do whatever the heck you want with it.

**Easter Eggs:** Perhaps only a handful of people really give a darn if their phone

comes with hidden easter eggs, and perhaps HTC agrees, because Sense doesn't come with the typical stock Android gems. There, there, heartbroken reader. You're a trooper, everything will be okay.

**Test Menu:** For those that like to dig really deep into menus, we combed through the test menu (accessible by dialing \*#\*#4636#\*#\* in the phone app) and found it to be identical in setup to stock Ice Cream Sandwich.

## Wrap-Up

Ah, Android skins. We've vehemently opposed many of them over the years, because each manufacturer chooses to value differentiation and "user experience" more than the nature of the OS itself and completely misses the point. Additionally, a healthy portion of these skins are loaded up with so many extra frills and gimmicks that the performance of the actual device suffers as a consequence. HTC's proprietary UI is no exception to this, and in the past has been one of the worst offenders.

With the exception of a few questionable nips and tucks, HTC's latest UI, Sense 4, has avoided this same reputation. Peter Chou's company has largely succeeded at its goal of bringing a lighter version of its skin to the One series. While it doesn't look like a copy of vanilla Ice Cream Sandwich, it's able to maintain its unique personality but still holds on to the spirit of what Matias Duarte has been working hard to accomplish with the Android OS. By this, we mean offering a fresh design, important new fea-

tures and great performance — all of these being elements that were sorely needed. For the first time in ages, we're loving the experience of a Sense-powered device. d

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*Brad is a mobile editor at Engadget, an outdoorsy guy, and a lover of eccentric New Wave and electro. Singer and beatboxer.*

# BOTTOMLINE

## HTC Sense 4.0

### PROS

- Fresh, attractive design
- Significant camera enhancements
- 25GB Dropbox storage included
- Lighter, less processor-intensive

### CONS

- Multitasking at odds with the stock ICS way
- No major improvement to the Sense keyboard

The latest version of Sense stays true to the spirit of Ice Cream Sandwich, and marks a major improvement to HTC's proprietary skin.



# HTC One S

The One S could be HTC's flagship: it's far ahead of its rivals performance-wise and looks great. However, the screen is slightly lacking, particularly compared to its bigger brother's.

BY MAT SMITH

In some alternate universe, the One S would be HTC's flagship phone. There's the new, forged-for-space body, a uniform 7.8mm thickness and a 4.3-inch Super AMOLED display — normally enough to qualify for the top slot. However, HTC decided to make this its (upper) middleweight contender, putting the quad-core One X right above it — and launching it at the same time. We've got the HSPA+ 



global edition, but aside from the radio differences, this is the same hardware you can expect to see from T-Mobile a little further down the line, and it's powered by the same processor that will run inside the US version of the One X.

Can the dual-core Snapdragon Krait possibly hold its own against Tegra 3? If you're in the market for a new Android device, why would you go for what is possibly HTC's second best? Perhaps — dare we say — it's not *all* about the cores and display size. Read on to see what the One series' mid-tier option has to offer.

## Hardware

The One S has an aluminum shell, but there's a difference between this and its unibody predecessors: this one's been treated to micro-arc oxidation. Throwing 10,000 volts at that body, what we're left with is a finish more akin to ceramic and stone than the usual matte metallic seen in HTC's past offerings.

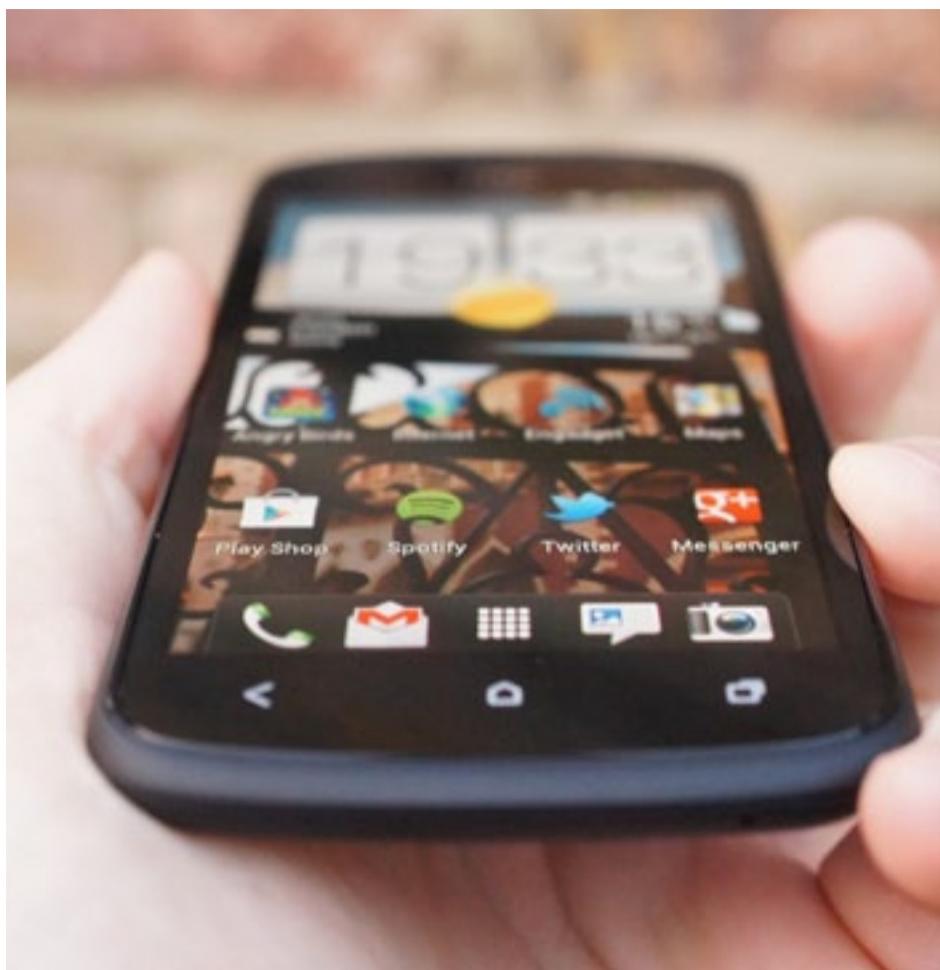
The company's gone on record saying that it toughens up the surface of the phone. While it certainly feels tougher, don't expect it to behave as flawlessly as Gorilla Glass — we did notice some light scratches on the matte surface, though we at least didn't uncover any metal. Both the top and bottom segments are coated in a soft-finish plastic which doesn't disguise wear-and-tear as well.

The top part lifts off to show access to the micro-SIM, but that's all you can get to. Like the HTC Radar there's no access to the battery or microSD storage, but it's probably this hardware lock-down that's helped HTC slim this dual-core phone down to this 0.3-inch profile and it fitted our hand great. If the One X borders on the bulky, the 4.3-inch screen here feels just right. We've come a long way.

The One S also packs HTC's new imaging tech: a dedicated ImageChip combined with a f/2.0 lens. The primary 8-megapixel camera gets a red trim on the black micro-arc oxidized version,

while it's blue on the grey anodized variant. The module doesn't protrude as much as on the One X, but we'd still have preferred a recessed lens. When you put the phone down, you're resting it on the camera — we can hear and feel the lens land on the surface. Aside from this flash of color on the camera, it's a relatively understated phone, with smaller Beats Audio branding at the base of the device, while the loudspeaker and ear piece grills are actually minute holes made into the body. Hidden behind the ear piece is a subtle notification light that glows from behind those holes to illustrate when the phone is charging / charged and if there's some email or social networking nugget waiting for you.

A front-facing camera lies to the right of the notification light, with the Super AMOLED screen dominating the rest of the front. While HTC's interpretation of Ice Cream Sandwich has been coupled with three capacitive buttons (no on-screen substitutes), it has replicated the original Android 4.0 phone by including a multitask button — there are no menu or search buttons here. Protected by that plasma-bathed coating, you will find Qualcomm's Snapdragon S4 Krait dual-core processor, ticking away at 1.5GHz, while 1GB of memory accompanies 12GB of available storage. HTC's recent deal with Dropbox means you will also receive an extra 25GB of storage for two years once you log in to the cloud storage service — and, yes, that is in addition to your existing cap.



## Display

Which do you want first: the good news or the bad news? Well, the good bit is that HTC has married a 540 x 960 qHD resolution with Super AMOLED. The bad news is it's missing a "Plus" at the end of that moniker. Yes, we're dealing with a PenTile screen, and while there are still plenty willing to overlook that graininess, after seeing it side-by-side against the high-definition beauty on the One X, we're going to rule in favor of the latter. While Super AMOLED wins with the blacker blacks, whites are just a bit too off. Comparing the resolution on the two One series devices, differences in sharpness will only be apparent in native apps and on the web — unless games and video content are ready for 720p, there's no difference in graphical polish, aside from those color palette issues.



SAMPLE  
IMAGES



## Camera

HTC's been pushing its new camera chops ever since MWC and we finally got a chance to try it out. And it works. Really well. This, along with the One X, is possibly the best Android cameraphone we've seen yet. It's an 8-megapixel, autofocus camera capable of 1080p video capture, with an LED flash and a tempting f/2.0 lens. In use, it's responsive, can capture video and stills concurrently and allows you to add several playful filters you might actually use. There's all the stable camera options to tweak inside the menus, including white balance, ISO and exposure, but if you're simply looking for an easy point-and-shoot, you'll never see them. The UI is an understated simple setup, with a big camera button matched by a similarly-sized video icon, while effects are located in a glass orb in the top right corner and a preview of the last still or video is in the lower right corner. Settings for flash, scenes and

the aforementioned technical options are all on the right side. Thanks to the f/2.0 lens, even shots in low-light turn out well — burst photography was especially impressive.

**This, along with the One X, is possibly the best Android cameraphone we've seen yet.**

Video capture at 1080p is generally well-focused with a good balance of color and light adjustment. The take-away here is that the One series has superb cameras; hardware and software both ensure good-quality images were taken quickly and easily.



BENCHMARK	HTC ONE S	HTC ONE X	GALAXY NOTE
<b>Quadrant</b>	5,053	4,906	3,998
<b>Linpack (single-thread)</b>	103.88	48.54	64.3
<b>Linpack (multi-thread)</b>	222.22	150.54	95.66
<b>NenaMark1 (fps)</b>	60.8	59.5	56.6
<b>NenaMark2 (fps)</b>	61.0	47.6	32.8
<b>Vellamo</b>	2,452	1,617	901
<b>SunSpider 9.1 (ms)<sup>1</sup></b>	1,742.5	1,772.5	2,902

Notes: <sup>1</sup> Lower numbers are better

## Performance and Battery Life

HTC's introduced us to a dual-core 1.5GHz Snapdragon S4 (MSM8260A) paired with 1GB of memory. The One S never shirked from what we asked of it. Attempting to make the browser stutter proved fruitless and tiling a complete non-issue. If your 3G or WiFi connection can keep up, you'll sail through the internet. Loading times on meatier apps was short, and it generally coped well with the likes of *Shadowgun* and *GTA 3*, although the audio didn't match the video on the venerable console title.

According to these benchmarks, the dual-core One S manages to trump its quad-core contemporary. Admittedly, tests like these can't be directly compared side-by-side, since the One X has a larger screen with much higher resolution, and takes advantage of a quad-core chip. Irrespective of this, the phone smoked its dual-core competition, leaving the likes of the Exynos-powered Galaxy Note choking on its exhaust.

The One S comes with a very middling 1,650mAh battery but performance betrayed those numbers. We hit just over eight and a half hours of constant video playback during our typical rundown test — 2.5 hours more than its sibling, the HTC One X. This was at 50 percent brightness, with WiFi on (but not connected), and email and Twitter set to fetch updates at regular intervals. This pegs it at around the same lifespan as the iPhone 4S when it comes to video playback, although it doesn't quite match the bigger-screened Galaxy Note. Then again, it doesn't have the same 2,200mAh battery store to draw on. In more standard use, the phone lasted through our daily grind, including emails, web browsing sessions every two hours or so, some Spotify playback and a handful of voice calls and text messages. Charging the One S was still a daily ritual.

Call reception was good, with the extra mic located at the top performing noise-



cancellation duties. Data speeds were as expected on both O2's HSPA+ and Three's HSPA service. On HSPA+, we reached speeds of around 2.5Mbps down and just under 1.5Mbps up, while HSPA circled around 1Mbps up and 1Mbps down — all pretty similar to results on our other handsets. On the other side of the pond, AT&T's HSPA+ nabbed us average speeds of around 4.5Mbps down and 1.1Mbps up. This global version features quad-band EDGE and tri-band HSPA+ 42Mbps (2100 / 900 / 850MHz) support — an AWS-capable model is coming to T-Mobile in the US.

## Software

HTC's latest skin catches up with its corresponding Android version, at least number-wise. Sense 4 aims to cut the

**Sporting a thinner and lighter design, the One S doesn't deserve to be hidden in the shadow of its pricier brother.**

excess while offering up an experience that remains familiar to HTC fans in the past. A very difficult trick to pull off, but it's a definitive move forward. While it isn't stock, it certainly holds on to more

Android riffs. Several widgets are also now available in both HTC and stock flavors.

Something worth noting is the new Sense keyboard. We've been testing both the One S and the One X and found key spacing was a bit tighter than on HTC's polycarbonate number. Fortunately, it's held on to some of its better keyboard ideas — you'll still be able to slide between numbers, accented letters and more obscure punctuation by holding down a letter and sliding across.

## Wrap-Up

Sporting a thinner and lighter design, the One S doesn't deserve to be hidden in the shadow of its pricier brother. With the latest dual-core Snapdragon S4 and noticeable improvements to HTC's Sense UI, as well as Android 4.0 and a potent camera, this phone is likely to play a large part of the manufacturer's renewed efforts after a shaky 2011. With a tactile finish and enough power to go toe-to-toe with HTC's quad-core entrant, it comes down to whether you're willing to trade a technically weaker screen for a noticeable price difference and better battery life. It's a decision we'd prefer not to make. d

*Myriam Joire and Brad Molen contributed to this review*

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*Mat is a Contributing Editor who lives in the UK. He's a Liverpool supporter who enjoys obscure Japanese gameshows.*



# BOTTOMLINE

HTC  
One S

£415 (\$667)

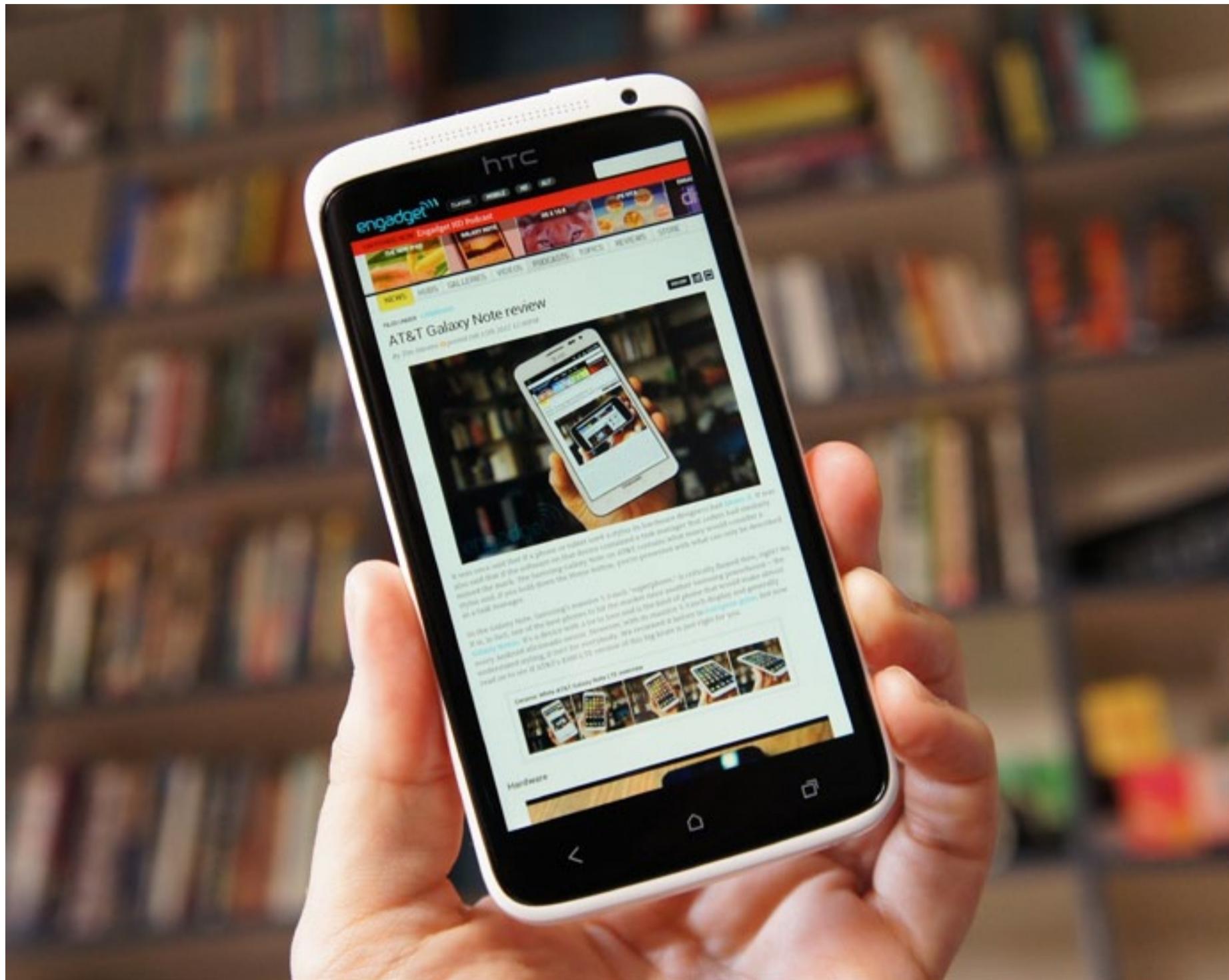
## PROS

- Solid performance
- HTC Sense on Ice Cream Sandwich is slick
- Stylish design
- Capable, accessible camera
- Good battery life

## CONS

- Screen is already outclassed

**The One S could be HTC's flagship: it's far ahead of its rivals performance-wise and looks great. However, the screen is slightly lacking, particularly compared to its bigger brother's.**



# HTC One X

Buying an HTC One X is a lot like getting a unicorn: it's wild, fast, white, beautiful, expensive and fickle. Still, it gives even the mighty Galaxy Nexus a run for its money.

BY MYRIAM JOIRE

**It's been a difficult year for HTC.** After several successful quarters, things have started looking less rosy in recent months with the company facing stiff competition and suffering from apparent brand dilution — the results of launching too many handsets with forgettable names, making too many compromises for the carriers, continuing to rely on Sense, and lacking an iconic flagship to take

on Samsung's mighty Galaxy S II. We knew something important was coming for Mobile World Congress after HTC timidly revealed the Titan II at CES — after all, the company has a long history of innovation.

A few days before flying to Barcelona and after being sworn to secrecy, we were quietly whisked into a San Francisco conference room with clear instructions: no pictures or video. There, in the middle of the table, was a white phone that instantly caught our eye — the HTC One X. To write that we came away impressed after briefly using it is a massive understatement. This was obviously a halo device made for geeks like us, something designed to take on the Galaxy Nexus of the world, something with the mother of all spec sheets, something running Ice Cream Sandwich with a significantly thinner and lighter version of Sense. Better yet, there were two other handsets with the same impeccable attention to detail — the One S and the One V. HTC was finally showing some vision again with strong branding, gorgeous design and a polished user experience. While first impressions go a long way, there's a lot to be learned about a product by living with it for a few days. So is the One X truly HTC's comeback device? Are we still delighted? Is this *the* Engadget phone? Dig into the full review to find out.

## Hardware

HTC went back to the drawing board. While many of its products from 2011



blended together in an amorphous, Sensation-esque blur, the company's drawn a line in the sand — this is its flagship and it's a beauty. The phone is housed in a polycarbonate unibody that's matte on the back and glossy at the sides. This polycarbonate material means the body shouldn't interfere with the phone's signal, while incidental scratches will reveal yet more brilliant white. Some considered contours along the body of the phone mean that despite its 8.9mm (0.35 inch) profile — and a 4.7-inch display — it always felt safe in our grasp. Although its size may be borderline for some people's palms, it's nowhere near as monstrous as the Galaxy Note. Compared to the likes of the Rezound and Sensation, it's also around 30 grams (1.1 ounces) lighter — presumably due to the new materials being put to use on HTC's great white hope.

Touring the body, the device is refreshingly unencumbered by complications — the earpiece speaker is even integrated into the polycarbonate shell. The



staple volume rocker is a white bar on the right side, while the micro-SIM tray is now hewn into the unibody (you'll need a metal pin to access it at the top of the back). On the left edge there's the MHL-capable micro-USB port, while the headphone socket and power button are both found on the top. Again, HTC's placement of this key, which also wakes the screen, makes less sense than if it was placed along the right edge, but the buttons are solid and responsive, coated in the same polycarbonate white as the unit — no easily-chipped silver paint. The camera noticeably protrudes from the center of the phone, accented by a metallic circle — this is a phone that's proud of its camera and we've dedicated a section to it. There's also a five-pin connector along the right side, ready for those inevitable docks and in-car holsters.

The speaker grill, made from 84 individually-drilled holes, belts out plenty of noise. If you're looking to use it to broadcast your music, you'll want to

have the device face down — a built-in Sense feature does exactly that when you flip the device over during calls. It still suffers from the same lack of bass found in most phones, although the One X is one of HTC's first devices to bring Beats Audio enhancements across *all* apps, removing one of our complaints with the tie-up. If you're looking for more detail on this Beats Audio offering, check the write-up we gave it in our Sensation XE review [Distro Issue#9].

Behind the polycarbonate gloss, the phone arrives with 32GB of memory, with 26GB of this accessible to the user. This is further augmented by a new Dropbox deal offering an extra 25GB to anyone that registers a device from the One series. It's all running on NVIDIA's quad-core (plus one) Tegra 3, clocked at 1.5GHz and different from its incoming LTE variant set to arrive with Qualcomm's dual-core 1.5GHz Snapdragon S4. The processor is teamed up with 1GB of RAM, while HTC's joined the NFC party, adding Android Beam functionality — where ICS apps allow it. We were able to ping some email addresses and websites between the One X and the Galaxy Nexus.

## Display

The One X matches the Rezound's 720p resolution, but houses it in a new Super LCD 2 panel and gifts it with 4.7 inches to play with, which translates to a pixel density of 316ppi. At this resolution, it embarrasses the rest of its similarly-sized cousins (e.g., the 4.7-

inch HTC Sensation XL) when compared side by side. And while we're not sure whether it's the pseudo-concave design of the display, that drops ever-so slightly on both edges or the thinner Gorilla Glass, the high definition pixel matrix seems to skim across the face of the phone — viewing angles are great, especially if the brightness is cranked up. Super AMOLED Plus aficionados, this is what your rival looks like. On the non-PenTile One X, colors seemed more natural and the whites were whiter than on AMOLED devices like the Galaxy Nexus. When outdoors, we had to max out brightness, but once we did, the screen was both navigable and readable.

## Camera

There are two basic ways manufacturers implement cameras on higher-end phones. One approach is to build a no-compromise imaging-centric device geared towards photography buffs, as popularized by Nokia with the N8 and the recently announced 808 PureView. The alternative is to take a competent shooter and make it simple and bullet-proof for anyone to enjoy, something Apple and (to a lesser extent) Samsung have achieved with the iPhone 4S and Galaxy S II (and derivatives).

While HTC has aimed — and mostly succeeded — at pleasing both the shutterbug and the layperson with handsets like the myTouch 4G Slide, Amaze 4G and upcoming Titan II, it has usually favored the ease-of-use approach. The

One X continues this trend by delivering one of the best all-round imaging experiences we've come across without sacrificing quality — thanks to an 8-megapixel backside-illuminated sensor, an incredibly wide aperture f/2.0 autofocus lens (vs. f/2.2 on the Amaze 4G, f/2.4 on the iPhone 4S, f/2.65 on the Galaxy S II and f/2.8 on the N8) and an extra processor called the ImageChip.

It's also the quickest cameraphone we've ever reviewed, the 0.7-second startup time and 0.2-second delay between shots beating even the speedy Galaxy Nexus. A single LED flash capable of five different intensity levels completes the package. While the hardware is generally state-of-the-art, there are a few omissions that prevent this shooter from hitting the bull's eye. Most disappointing is the lack of a dedicated two-stage camera button — we'll make do without the mechanical shutter, xenon flash and autofocus-assist light common to devices like the N8, but we'll take a proper mechanical shutter key over a basic on-screen button anytime. We're also concerned with the long-term durability of the glass covering the optics, which is exposed to fingerprints and scratches by protruding from the phone's body.

Just like the rest of the One X, the camera specs only tell half of the story. The software — called ImageSense, naturally — plays a big part in the handset's imaging mojo. It packs serious processing chops and supports a smorgasbord of features like real-time fil-



SAMPLE  
IMAGE



ters, HDR, panorama, burst and slow-motion video (to name a few). Instead of unraveling every minute UI detail, let's focus (pardon the pun) on the shooter's functionality. First, there's no more distinction between photo and video modes — you're welcome to take still or moving pictures anytime by tapping the appropriate on-screen shutter key. This means you're able to capture 8-megapixel widescreen images (3264 x 1840 pixels) while recording video! Better yet, it's even possible to grab HD frames (1920 x 1088 pixels) from an existing video during playback.

Second, there's a full set of Instagram-like filters — including tweakable vignette and depth of field effects — which can be applied to photos in real-time or after the fact. Both the camera and gallery apps provide a plethora of adjustments available before shooting and later while editing, such as contrast, saturation and sharpness. There's also an array of manual settings to choose from, such as exposure

level, white balance and ISO. We have a few niggles though — conspicuously absent is any kind of metering option (center-weighted, spot or average) and while touch-to-focus also offers some control over EV there's no way to lock focus and exposure before reframing. Most shooters enable this either by half pressing the dedicated two-stage camera button (N8), tapping and holding any part of the viewfinder until the lock indicator appears (iPhone 4S) or — our favorite for lack of a proper mechanical shutter key — tapping and holding the on-screen camera button (Galaxy S II). Hopefully this is something HTC can fix in a future update.

Now let's talk about image quality. We pitted the One X against the current cream of the crop — the N8, Amaze 4G, iPhone 4S and Galaxy Note (which uses the same module as the Galaxy S II) plus Canon's S95 compact point-and-shoot. The camera landed somewhere in the middle of this star-studded pack, marginally beating the Galaxy Note

and iPhone 4S while almost matching the Amaze 4G. Sure, it's not in the same league as the N8 (which rivals the S95 in some cases), but this is one stellar camera, especially when you consider that HTC is not positioning this phone as an imaging-centric device like the Amaze 4G.

Low-light performance is particularly impressive thanks to the fast f/2.0 lens and backside-illuminated sensor, which combine to gather a huge amount of

**Yes, the proof  
is in the pudding  
—people who  
care little about  
aperture and  
shutter settings  
will take great  
photos with  
the One X.**

light. HDR night shots are truly magical — no mushrooms required. Still, the software relies on a little too much noise reduction in extreme low-light which results in a noticeable loss of detail, and since there's no assist light, the autofocus often struggles in the dark and requires a few touch-to-focus attempts before getting a lock. Pictures

taken in most conditions look fantastic, but looking closely we're longing for a sensor with a wider dynamic range and higher quality lens (yes, the N8's Carl Zeiss optics are hard to beat).

While color balance is generally top-notch we noticed some issues with the white balance being off at times right after launching the camera — it rights itself after a few seconds, but it's a problem if you're trying to catch that fleeting moment. Metering is usually accurate, but the lack of exposure lock means that in some instances (like sunsets) we resorted to fiddling with the EV to avoid washing out parts of the shot. Of course, we're being picky here and none of this takes into account ease-of-use, which rivals the experience on the iPhone 4S (and beats it, in terms of speed). Yes, the proof is in the pudding — people who care little about aperture and shutter settings will take great photos with the One X.

The One X captures 1080p video at a silky smooth 30fps with continuous autofocus and stereo audio. Results mostly look sharp and sound clear — we noticed some faint video compression artifacts (bitrate is 10Mbps) and the automatic gain control reacted a little too quickly to wind noise, but this is nothing to be concerned about in most situations. In contrast with how quickly the camera handles stills, there's about a four-second (!) delay between tapping the on-screen video capture button and the actual start of the recording which means you're likely to miss some

firssts if you're not prepared. There's one more neat trick worth mentioning, and that's slow motion. Yes, this shooter is able to record 480p widescreen video (768 x 432 pixels, to be exact) at 60fps for playback at about 24fps .

## Performance and Battery Life

Quad-core phones have arrived. While we've already seen the NVIDIA tech on one of our favorite Android tablets, the One X is our first Tegra 3 smartphone to arrive for testing and it doesn't disappoint. We tried to push the hardware as much as we could and it handled nearly all of our tasks effortlessly. GTA3 loaded effortlessly — and was fast. Even task-switching couldn't sink the phone, although it *does* pause to think when you jump between heavier tasks like video and gaming. Browser perfor-

mance is a revelation too. We couldn't spot any tiling issues as we scrolled at high-speed through the front page of Engadget — none — pictures were there before we even got to them.

This triumphant real-world performance is backed up by some understandably jaw-dropping benchmark scores, besting even the Transformer Prime in Quadrant and Vellamo performance tests and thrashing the Galaxy Note — our previous smartphone heavy-lifter — across the board.

While an AT&T-branded One X is set to arrive carrying LTE (and a SnapDragon S4), this global model features both quad-band EDGE and HSPA+ 42Mbps (2100 / 1900 / 900 / 850MHz). Speed tests on AT&T in the US reached about 6Mbps down and 1.2 Mbps up on HSPA+, and Three

BENCHMARK	HTC ONE X	HTC ONE S	ASUS TRANSFORMER PRIME	SAMSUNG GALAXY NOTE
Quadrant (v2)	4,906	5,053	4,018	3,854
Linpack (single-thread)	48.54	103.88	43.35	64.3
Linpack (multi-thread)	150.54	222.22	67.05	95.66
NenaMark1	59.5	60.8	60.07	56.6
NenaMark2	47.6	61.0	46.07	32.8
SunSpider 9.1 <sup>1</sup>	1,772.5	1,742.5	1,861	2,902
Vellamo	1,617	2,452	953	901

Notes: <sup>1</sup> lower numbers are better



and O2 in the UK averaged around 2.2Mbps down and just under 1Mbps up on HSPA. Call quality is good, with the noise-cancelling second mic helping to focus on the voice, although some background static remained on our test calls on several networks.

Battery life, however, looks likely to pay the price for this. With brightness set to 50 percent, WiFi on but not connected, the One X's 1,800mAh juice-pack managed six hours of continuous video playback — that's two hours short of its sibling, the One S. Obviously, this sort of activity is likely to use the phone's multiple cores, but we found that Tegra 3's 4-PLUS-1 setup still continues to slurp the battery on very light use — we didn't notice that extra companion core taking any sort of burden off the phone's power consumption. Checking our battery status, it seems like HTC's Super LCD 2 screen — perhaps unsurprisingly — was also to blame for a life span that didn't last a full workday.

## Software

The latest version of HTC's proprietary skin, Sense 4, comes on top of Android 4.0.3. But this isn't your father's old version of Sense. In fact, it's a much more refreshing take on a skin that used to be incredibly bogged down by nonsense animations and unnecessary UI elements. Is it stock Ice Cream Sandwich? No, not by a long shot. But what you'll get with the One X's user experience is a pleasant mix of ICS and Sense, both halves somehow finding a way to live together in harmony.

That's not to say Sense 4 is a complete and perfect Android skin. But it does a much better job figuring out the spirit of stock Android and truly striving to emulate the OS, instead of throwing Google's designs and inspiration out the window. HTC's goal was to make the new Sense much lighter and less burdensome to the rest of the platform, and we'd say it has largely succeeded.

There is so much to discuss in the new Sense that our overview of it became too large to include with the rest of our impressions on the One X. To get the full scoop complete with screenshots and video, visit our incredibly comprehensive Sense 4 review [also in this issue].

## Wrap-Up

There's absolutely no doubt that the One X is a masterpiece of an Android device: it obliterates pretty much all of its competitors by giving even the mighty Galaxy Nexus a run for its money. HTC's really crafted something special here, with a brilliant combination of brand-

ing, industrial design and user experience. This handset looks and feels stunning, with top-notch materials and build quality, the most gorgeous display we've ever stared at on a phone, a fantastic camera that's fast and easy to use and a laundry list of every possible spec under the sun. Sense 4 is thin and light enough to enhance — not detract from — stock Ice Cream Sandwich. Pinch us, 'cause frankly, we're smitten.

Still it's not all rainbows and glitter. While it's incredibly quick and smooth in actual use, we're surprised that the quad-core Tegra 3 in the One X performed slightly worse in our benchmarks than the dual-core Snapdragon S4 in the One S. Battery life is by far our biggest concern and we really hope that HTC addresses this head-on with future software updates. It'll be interesting to see how its LTE equipped twin (which is also Snapdragon S4-based) fares in those areas when it launches in the next few weeks — let's just hope AT&T keeps the firmware as unadulterated as possible. Ultimately, buying a One X is a lot like getting a unicorn — it's wild, fast, white, beautiful, expensive and fickle. Time will tell if dressage school tames this power hungry beast. □

*Mat Smith, Brad Molen and Richard Lai contributed to this review.*

*Myriam was born wearing combat boots and holding a keyboard; moments later she picked up a soldering iron. She's been stomping, typing and hacking ever since.*



## BOTTOMLINE



**HTC  
One X**

**€599 (\$800)**

### PROS

- Looks and feels stunning
- Most gorgeous display
- Fantastic camera
- Incredibly quick and smooth
- Sense 4 UI is thin and light

### CONS

- Battery life not as good as the One S

**Buying an HTC One X is a lot like getting a unicorn: it's wild, fast, white, beautiful, expensive and fickle. Still, it gives even the mighty Galaxy Nexus a run for its money.**



# SMARTPHONE BUYER'S GUIDE



*Spring 2012 Edition*

BY ZACHARY LUTZ



## SPRINGTIME IS HERE.

It's a season of renewal, and similarly, an ideal time to replace your aging phone with one that you'll adore. With this in mind, we give you Engadget's smartphone buyer's guide — your one-stop resource for selecting the best handset that fits your desires and budget.

# AT&T



## Samsung Galaxy S II Skyrocket

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**OPERATING SYSTEM:** Android 2.3

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**CPU:** 1.5GHz Dual-core Qualcomm APQ8060

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**STORAGE:** 1GB RAM, 16GB Built-in

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**SCREEN:** 4.5-inch 800 x 480 Super AMOLED Plus

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**CAMERA:** 8MP w / LED Flash and 1080p, Front-facing 2MP

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**PRICE:** \$200 on Contract

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AT&T has no shortage of outstanding smartphones on offer, so picking a good one is somewhat akin to shooting fish in a barrel — it's quite fun. Our top pick remains the Skyrocket, which adds a larger screen and LTE connectivity to the original Galaxy S II (\$100). For those not yet privy to AT&T's LTE service, we still recommend choosing a handset with this capability as insurance for the future. To that end, we'd recommend the Galaxy Note (\$300), although its unorthodox size prevents it from being the most appropriate choice for the mainstream — AT&T's version also lacks the raw horsepower of the international model.

### The Rest of the Best

	SAMSUNG GALAXY NOTE	HTC ONE X	APPLE iPhone 4S	NOKIA LUMIA 900	HTC TITAN II
<b>OS</b>	Android 2.3	Android 4.0	iOS 5.1	Windows Phone 7	Windows Phone 7
<b>Price</b>	\$300	TBD	\$200 - \$400	\$100	\$200
<b>Availability</b>	In Stores Now	TBD	In Stores Now	April 8th	April 8th



Even though QWERTY handsets are quickly being relegated to an afterthought in the smartphone realm, the Captivate Glide bucks this trend with an extremely competent option that can hold its own against the big boys. It and the Droid 4 (\$200) from Verizon are currently the two most desirable smartphones with physical keyboards. One of the few omissions that may steer users toward the Droid 4 is the lack of LTE connectivity on the Captivate Glide — fortunately, its nimble HSPA+ 21Mbps data speeds should more than satisfy the majority of consumers. We were a bit disappointed by the call quality of the Captivate Glide during our review, but otherwise, it's an outright winner.



## Samsung Captivate Glide

**OPERATING SYSTEM:** Android 2.3

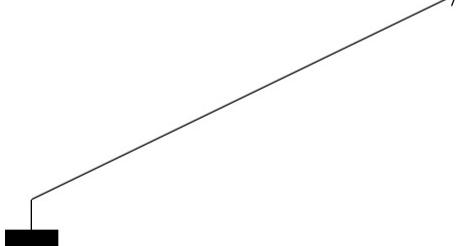
**CPU:** 1GHz Dual-core NVIDIA Tegra 250

**STORAGE:** 1GB RAM, 8GB built-in

**SCREEN:** 4-inch 800 x 480 Super AMOLED

**CAMERA:** 8MP w / LED Flash and 720p, 1.3MP Front-facing

**PRICE:** \$150 on Contract



## Pantech Burst

**OPERATING SYSTEM:**

Android 2.3

**CPU:** 1.5 GHz Dual-core Qualcomm MSM8660

**STORAGE:** 1GB RAM, 16GB Built-in

**SCREEN:** 4-inch, 800 x 480 Super AMOLED

**CAMERA:** 5MP w / LED Flash and 720p Video, Front-facing VGA

**PRICE:** \$50 on contract



Thanks to the Burst, you won't need to empty your bank account to join

in all the LTE fun. For a mere \$50, you'll be treated to a proper LTE handset that gives the Skyrocket a run for its money in terms of performance. Just let that sink in for a minute. The Pantech Burst is the best value by a country mile on any network, and while you'll need to forego niceties such as premium build materials and a stellar camera, we think it's a trade-off that you'd be mad to refuse.

# SPRINT



Want the best Galaxy S II handset in the country? Go with Sprint. Of all the domestic models, it (along with AT&T's Galaxy S II) remains closest in spirit to the original with its blazing Exynos processor. The Epic 4G Touch is an improvement from the original, thanks to its larger display, extra battery life and handy notification light. In fact, its only downside is the lack of international support — in which case, the Photon 4G (\$100) remains a viable option. It's also worth a mention that Sprint is the only carrier that offers unlimited data for the iPhone 4S (\$200 - \$400). Still, given Sprint's relatively slow EV-DO network, we feel that AT&T's still the most appropriate choice for the majority of iPhone users.

## Samsung Epic 4G Touch

**OPERATING SYSTEM:** Android 2.3

**CPU:** 1.2GHz Dual-core Samsung Exynos

**STORAGE:** 1GB RAM, 16GB Built-in

**SCREEN:** 4.5-inch, 800 x 480 Super AMOLED Plus

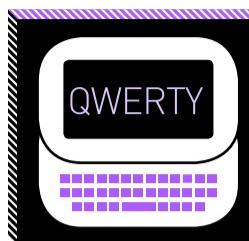
**CAMERA:** 8MP w / LED Flash and 1080p, Front-facing 2MP

**PRICE:** \$200 on Contract



### The Rest of the Best

	MOTOROLA PHOTON 4G	APPLE iPhone 4S
<b>OS</b>	Android 2.3	iOS 5.1
<b>Price</b>	\$100	\$200 - \$400
<b>Availability</b>	In Stores Now	In Stores Now



Looking for a QWERTY handset on Sprint? Don't bother. While the

Epic 4G was once a fine option in its heyday, it's now a miserably outdated handset with a price that's nothing short of an insult. Until Sprint begins giving the Epic 4G away for free, you should steer clear at all costs. If you want to upgrade today, your best bet is to jump ship to either AT&T or Verizon. Otherwise, the only sane option is to wait for Sprint to get its act together.

## Samsung Epic 4G

**OPERATING SYSTEM:** Android 2.3

**CPU:** 1GHz Samsung S5PC110

**STORAGE:** 512MB RAM + 16GB microSD

**SCREEN:** 4-inch, 800 x 480 Super AMOLED

**CAMERA:** 5MP w / LED Flash and 720p Video, VGA front-Facing

**PRICE:** \$150 on Contract (Before \$50 Rebate)



The Conquer 4G is positioned as a low-cost WiMAX handset on the Sprint network. While we appreciate its responsive performance — thanks in large part to the near-stock implementation of Android — we have serious misgivings about its subpar, low-res HVGA display. Most importantly, the XPRT Conquer 4G is nothing short of a steaming pile in comparison to the Burst (\$50) on AT&T. Those looking to stay with the Now Network should avoid company stores and seek out third-party resellers such as Amazon Wireless, where quality devices such as the Epic 4G Touch and Nexus S 4G can often be found for a penny.



## Samsung Conquer 4G

**OPERATING SYSTEM:** Android 2.3

**CPU:** 1GHz Qualcomm MSM8655

**STORAGE:** 512MB RAM + 2GB microSD

**SCREEN:** 3.5-inch, 480 x 320 TFT-LCD

**CAMERA:** 3.2MP w / LED Flash and VGA, 1.3MP Front-facing

**PRICE:** \$50 on Contract

# T-MOBILE



## Samsung Galaxy S II

**OPERATING SYSTEM:** Android 2.3

**CPU:** 1.5GHz Qualcomm APQ8060

**STORAGE:** 1GB RAM, 16GB Built-in

**SCREEN:** 4.5-inch, 800 x 480 Super AMOLED Plus

**CAMERA:** 8MP w / LED Flash and 1080p, Front-facing 2MP

**PRICE:** \$280 on Contract (Before \$50 Rebate)



In many ways, T-Mobile's Galaxy S II is the runt of the litter. Despite its use of the

same chipset as the Skyrocket, it performed significantly worse in our benchmark tests and pulled up the rear in battery life. To its credit, only when compared to the other Galaxy S II handsets does it appear anything less than excellent. It offers quick performance, dependable battery life, a beautiful display and a solid camera. Depending on your region, T-Mobile offers three different classes of HSPA+: 14.4Mbps, 21Mbps and 42Mbps. Sadly, not all handsets can access the speediest tiers, but T-Mobile's Galaxy S II is more than capable of riding in the fast lane. It easily rises head and shoulders above the rest of the Magenta clan.



We're not gonna lie, we have some serious reservations about the myTouch 4G Slide. Yes,

it's the best QWERTY handset that you can find on T-Mobile, but you can do better elsewhere. Despite its dual-core foundation, the device offers sub-par performance, its star feature — the physical keyboard — is overly mushy, and its battery is bound to check out on you sooner rather than later. Sure, it has a fantastic camera, but its high price makes the myTouch 4G Slide a laughable choice when compared to its rivals at AT&T and Verizon.



## myTouch 4G Slide

**OPERATING SYSTEM:** Android 2.3

**CPU:** 1.2GHz Dual-core Qualcomm MSM8260

**STORAGE:** 768MB RAM + 8GB microSD

**SCREEN:** 3.7-inch, 800 x 480 S-LCD

**CAMERA:** 8MP w / LED Flash and 1080p, 1.3MP Front-facing

**PRICE:** \$250 on Contract (Before \$50 Rebate)



## Nokia Lumia 710

**OPERATING SYSTEM:** Windows Phone 7.5

**CPU:** 1.4GHz Qualcomm MSM8255

**STORAGE:** 512MB RAM, 8GB Built-in

**SCREEN:** 3.7-inch, 800 x 480 ClearBlack TFT-LCD

**CAMERA:** 5MP w / LED Flash and 720p Video Capture

**PRICE:** Free on Contract (Online Only)



If you're loyal to T-Mobile and need to save some cash, look no further than the

Lumia 710. It offers consistently snappy performance, characteristic of Windows Phone, and its support for HSPA+ 14.4Mbps translates into a nimble browsing experience. Outside of its finicky camera, the 710 can go toe-to-toe with considerably pricier handsets. It is set to receive hotspot capability in a future update, but if you want this feature today — or simply insist on Android — then the Exhibit II 4G (\$70, before \$50 mail-in rebate) is another great value proposition. For those savvy shoppers, T-Mobile also sporadically runs online promotions on its finest phones.

# VERIZON WIRELESS



Motorola won us over with the Droid RAZR Maxx by offering blistering LTE performance inside a svelte handset that simply refuses to give up the ghost. It's a pricy option, but who among us has ever complained that our phone's battery lasted too damn long? In this sense, the Droid RAZR Maxx is appropriate for anyone that can afford it, and its massive 3,300mAh cell is a clear enough advantage to unseat Verizon's previous king, the LTE-equipped Galaxy Nexus (\$300). For those unable to swallow such expensive medicine, the Rezound (\$200) is a worthy alternative that offers an absolutely stunning display, admirable performance and a set of premium headphones — in fact, the only area where it comes up short is battery life. Ironic, isn't it?

## Motorola Droid RAZR Maxx

**OPERATING SYSTEM:** Android 2.3

**CPU:** 1.2GHz Dual-core TI OMAP 4430

**STORAGE:** 1GB RAM, 8GB Built-in +16GB microSD

**SCREEN:** 4.3-inch, 960 x 540 PenTile Super AMOLED

**CAMERA:** 8MP w / LED Flash and 1080p, Front-facing 1.3MP

**PRICE:** \$300 on Contract





## Motorola Droid 4

**OPERATING SYSTEM:** Android 2.3

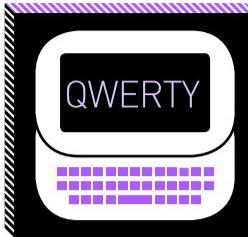
**CPU:** 1.2GHz Dual-core TI OMAP 4430

**STORAGE:** 1GB RAM, 16GB Built-in

**SCREEN:** 4-inch, 960 x 540 PenTile TFT-LCD

**CAMERA:** 8MP w / LED Flash and 1080p, Front-facing 1.3MP

**PRICE:** \$200 on Contract



If you insist on a QWERTY keyboard, you're in luck! The Droid 4, one of two

such phones we'd recommend, happens to be on Verizon. It hits many high marks, thanks to its speedy performance, LTE connectivity and impressive battery life. Perhaps most importantly, its keyboard is absolutely fabulous. Our only noteworthy gripe is its relatively lackluster display. In this regard, we prefer the Captivate Glide (\$150) on AT&T for its higher quality (albeit, lower-res) screen, along with its faster performance and longer battery life. Neither option is without sacrifice, but if you're content with Verizon, it's a safe bet.



In the ten months since the Droid X2's arrival, it's been relegated to the value bin. While,

LTE isn't in the mix, it brings many premium features and a price that was previously unthinkable on Verizon. The X2's high points include solid performance, excellent build quality, respectable battery life and a nice, high-res display. For those who absolutely insist on having LTE and refuse to pay a premium, the Pantech Breakout (\$50) is your one-way ticket to speed — at least in terms of data. Don't be fooled, though — the Breakout doesn't nearly approach the Burst's performance.



## Motorola Droid X2

**OPERATING SYSTEM:** Android 2.3

**CPU:** 1GHz Dual-core NVIDIA Tegra 250

**STORAGE:** 512MB RAM, 8GB Built-in + 8GB microSD

**SCREEN:** 4.3-inch, 960 x 540 PenTile TFT-LCD

**CAMERA:** 8MP w / Dual-LED Flash, 720p Video Capture

**PRICE:** \$50 on Contract (Online Only)

## BOOST MOBILE LG Marquee

**OPERATING SYSTEM:** Android 2.3

**CPU:** 1GHz TI OMAP 3630

**STORAGE:** 512MB RAM, 4GB Built-in + 2GB microSD

**SCREEN:** 4-inch, 800 x 480 IPS LCD NOVA Display

**CAMERA:** 5MP w / LED Flash and 720p Video, Front-facing 2MP

**PRICE:** \$280

Our favorite among the Boost bunch is the Marquee, which offers a superior IPS NOVA display and a better camera than its closest rival, the Warp (\$200). Both are reasonable performers, however, thanks to the near stock implementation of Gingerbread. If your budget outweighs the Marquee's advantages, you're still safe with the Warp.



## CRICKET Huawei Mercury

**OPERATING SYSTEM:** Android 2.3

**CPU:** 1.4 GHz Qualcomm MSM8655T

**STORAGE:** 512MB RAM, 4GB Built-in + 2GB microSD

**SCREEN:** 4-inch, 854 x 480 TFT-LCD

**CAMERA:** 8MP w / LED Flash and 720p Video, Front-facing VGA

**PRICE:** \$230 (Online Only, Before \$50 Rebate)

Cricket finally has a phone we genuinely like, and better yet, its price can't be beat. The Mercury, a rebadged version of the Honor, delivers a solid display, great performance and top-notch battery life. It's unmatched on the carrier and, given its price, you'd be remiss to purchase any other handset from Cricket.



## CINCINNATI BELL HTC Radar

**OPERATING SYSTEM:** Windows Phone 7.5

**CPU:** 1GHz Qualcomm MSM8255

**STORAGE:** 512MB RAM, 8GB Built-in

**SCREEN:** 3.8-inch, 800 x 480 S-LCD

**CAMERA:** 5MP w / LED Flash and 720p, VGA Front-facing

**PRICE:** \$250 on Contract (Before \$100 Rebate)

The Radar is a well-rounded choice, offering solid performance, dependable battery life and an excellent display. We're also quite fond of its build quality and camera. Granted, it can't match the spec sheet prowess of the LG 2X — our pick for Android — but we find its \$300 price tag (before rebate) an absolute crime.

## C SPIRE WIRELESS Apple iPhone 4S

**OPERATING SYSTEM:** iOS 5.1

**CPU:** Dual-core Apple A5

**STORAGE:** 512MB RAM, 16GB or 32GB Built-in

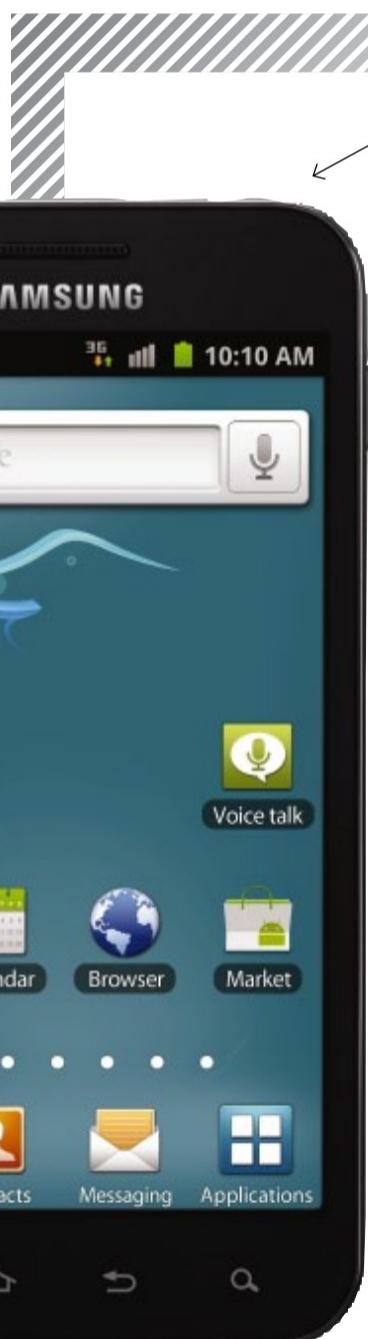
**SCREEN:** 3.5-inch, 960 x 540 IPS Retina Display

**CAMERA:** 8MP w / LED Flash and 1080p, Front-facing VGA

**PRICE:** \$150 or \$250 on Contract



The regional carrier surprisingly offers a subsidized version of the 4S for \$50 less than any major network. It's hard to dismiss the 4S' mass appeal, with its fluid performance, IPS Retina Display and fantastic camera. For those with a general Apple aversion, you can also pick up a \$70 Milestone X2 (aka Droid X2).



## US CELLULAR Samsung Galaxy S II

**OPERATING SYSTEM:** Android 2.3

**CPU:** 1.2GHz Dual-core Samsung Exynos

**STORAGE:** 1GB RAM, 16GB Built-in

**SCREEN:** 4.5-inch, 800 x 480 Super AMOLED Plus

**CAMERA:** 8MP w / LED Flash and 1080p, Front-facing 2MP

**PRICE:** \$330 on Contract (Before \$100 Rebate)

Remember how we said the best domestic variant of the Galaxy S II could be found on Sprint? Well, that's also true of US Cellular. The only appreciable difference here is US Cellular's lack of WiMAX — otherwise, this version is every bit as awesome. Unfortunately, this Galaxy S II costs \$130 more.

## METRO PCS LG Connect 4G

**OPERATING SYSTEM:** Android 2.3

**CPU:** 1.2GHz Dual-core Qualcomm MSM8660

**STORAGE:** 1GB RAM, 4GB Built-in + 2GB microSD

**SCREEN:** 4-inch, 800 x 480 IPS LCD NOVA Display

**CAMERA:** 5MP w / LED Flash and 720p Video, Front-facing VGA

**PRICE:** \$349 (Before \$30 Rebate)

While it retains the excellent IPS NOVA display of its forebear (the Optimus Black), the Connect 4G offers a dual-core processor and LTE. The Connect 4G easily bests its sibling, the Esteem (\$349), and buries our previous pick, the Admire (\$80). For those on a budget, we recommend the \$119 Wildfire S.





## VIRGIN MOBILE LG Optimus V

**OPERATING SYSTEM:** Android 2.2

**CPU:** 600MHz Qualcomm MSM7627

**STORAGE:** 512MB RAM, 512MB Built-in + 2GB microSD

**SCREEN:** 3.2-inch, 480 x 320 LCD

**CAMERA:** 3.2 megapixel, VGA Video Capture

**PRICE:** \$100

The Optimus V is a perennial favorite of ours, and it's the only phone offered by Virgin Mobile that Boost simply can't match. That said, it's also the only phone on this list that clocks under 1GHz. Make Virgin Mobile your choice only if you can't afford to spend more.

# UNLOCKED HANDSETS

## HTC One X

**OPERATING SYSTEM:** Android 4.0

**CPU:** 1.5GHz Quad-core NVIDIA Tegra 3

**STORAGE:** 1GB RAM, 32GB Built-in

**SCREEN:** 4.7-inch, 1280 x 720 Super LCD 2

**CAMERA:** 8MP w / LED Flash and 1080p, Front-facing 1.3MP

**PRICE:** \$750-\$800

If you're looking for the most powerful, awe-inspiring handset on the market, don't bother forming a search committee — choose the One X. Not only is it insanely fast, but it's also a stunner. Early adopters will be among the first to experience its high-quality, 4.7-inch HD display and superb camera.



## Samsung Galaxy Nexus HSPA+

**OPERATING SYSTEM:** Android 4.0

**CPU:** 1.2GHz Dual-core TI OMAP 4460

**STORAGE:** 1GB RAM, 16GB Built-in

**SCREEN:** 4.65-inch, 1280 x 720 PenTile Super AMOLED

**CAMERA:** 5MP w / LED Flash and 1080p, Front-facing 1.3MP

**PRICE:** \$570-\$620



The Galaxy Nexus remains our favorite unlocked handset, thanks in no small part to its pentaband HSPA+ 21Mbps radio. For this reason alone, it's an ideal solution for globetrotters and those who appreciate their freedom. Most importantly, it offers Android 4.0 in all its glory — untouched and straight from Google.

## Samsung Galaxy Note

**OPERATING SYSTEM:** Android 2.3

**CPU:** 1.4 GHz Dual-core Samsung Exynos 4210

**STORAGE:** 1GB RAM, 16GB Built-in

**SCREEN:** 5.3-inch, 1280 x 800 PenTile  
Super AMOLED

**CAMERA:** 8MP w / LED Flash and 1080p,  
Front-facing 2MP

**PRICE:** \$600-\$630



Samsung's Exynos SoC delivers blazing performance, but due to its lack of LTE, you'll only find the Exynos in the HSPA+ model. It also offers an impressive 5.3-inch display, excellent battery life, a top-notch camera and the rather handy S Pen. The international version doesn't support T-Mobile's 1700MHz (AWS) band, but it's perfect for AT&T's network, along with 2100MHz and 900MHz international bands.



## Nokia N9

**OPERATING SYSTEM:** MeeGo 1.2 Harmattan

**CPU:** 1GHz TI OMAP 3630

**STORAGE:** 1GB RAM, 16GB or 64GB Built-in

**SCREEN:** 3.9-inch, 854 x 480  
ClearBlack AMOLED

**CAMERA:** 8MP w / LED Flash and 720p,  
Front-facing VGA

**PRICE:** \$440 (16GB), \$500-\$550 (64GB)

For those looking to buck the Android / iOS trend, the Nokia N9 remains your best unlocked bet. It offers pentaband UMTS / HSPA (14.4Mbps) support, along with quadband connectivity for GSM and EDGE networks. It's just awesome, thanks to its unique OS, beautiful enclosure, excellent ClearBlack display and solid camera.

## Apple iPhone 4S

**OPERATING SYSTEM:** iOS 5.1

**CPU:** Dual-core Apple A5

**STORAGE:** 512MB RAM, 16GB or 32GB Built-in

**SCREEN:** 3.5-inch, 960 x 540 IPS Retina Display

**CAMERA:** 8MP w / LED Flash and 1080p, Front-facing VGA

**PRICE:** \$649 (16GB), \$749 (32GB)  
or \$849 (64GB)

With an unlocked model available directly from Apple, the 4S could be a traveler's best friend. It allows you to use micro-SIMs from a number of carriers overseas without incurring any nasty roaming charges from AT&T. Users will, naturally, appreciate its excellent Retina Display, nimble performance, quality camera and app selection.



# Nokia Lumia 900

**Nokia's Lumia 900 is a steal for consumers looking for dependable performance, ease of use, LTE connectivity, an attractive design and reasonable price.**

BY JOSEPH VOLPE

**Long-awaited**, heralded, longed for, lusted after, overdue, deal breaker, savior, second coming, dead-on arrival, revelation, last gasp, comeback, hail mary pass, flagship... finally! If that string of descriptors hasn't already tipped you off, Nokia's Windows Phone messiah has arrived stateside to either silence critics or give' em fodder for further nay-saying. Ensconced in a polycarbonate frame that's similar to the N9, the Lumia 900 on AT&T's LTE network is widely





understood to be Espoo's first true stab at building a presence for a mobile brand that's ubiquitous everywhere but here.

To understand the gamble the company's making with the Lumia 900, one need only look to another critically acclaimed, yet interminably stalled overseas import: Kylie Minogue. That foreign pop siren, a music industry veteran, has repeatedly failed to empty mainstream American wallets with her scattered hits, despite enjoying chart domination across the globe. Indeed the formula for US success is a fickle one. No matter the product category, the crossover membrane can sometimes prove too thick to permanently breach, often resulting in a "one and done" mentality marked by an inevitable retreat to more conciliatory European shores.

For the time being, though, it appears that Nokia's going all in, ready to see its folie à deux with Microsoft through to the end. Indeed, with an irresistible on-contract price of \$99, it would seem both parties are counting on this to be the mass market magic bullet they've sorely needed. So, can the Lumia 900, a single-core 1.4GHz handset hampered by a so-so 800 x 480 display, prove this tech alliance wasn't ill-struck after all? Can an attractive industrial design and simplified UI triumph over seem-

ingly modest specs? Will Nokia end up retreating to its overseas kingdom? Abandon those fanboy caps all ye who tag along, as we put this Finnish smartphone under the hot lights.

## Hardware

Given that it borrows from the Lumia 800's quirky design, you'd assume your initial brush with the 900 would be love at first sight. You'd think that, but you'd be wrong. Something's slightly amiss here, and it took us a moment to hone in on what, exactly, is keeping the 900 from a front row seat in the wow department. Eventually, though, it came to us: that screen! Forget its humble 800 x 480 resolution for the time being; that's not the glaring flaw. What kept us scratching our heads was Nokia's decision to nix the 800's sinuously tapered curves, that chassis whose glass panel seamlessly bled into the polycarbonate hull. It's gone, and for no good reason. Instead, users are treated to a jarring experience: a border now surrounds that 4.3-inch display, causing it to protrude awkwardly from that shapely, cyan body. Suffice to say, it makes for an unflattering first impression.

So, that's ding one: some unequivocal ball dropping on Nokia's part. Are you prepared for aesthetic con number two?

This change is more subtle and once again, it wasn't for the best. If you've ever held an 800 in hand, you know how *premium* it feels. Inevitably, then, you'll notice the change in this handset's texture. A body that was once smooth and polished has grown rougher in its journey across the Atlantic. Of course, most consumers will probably be none the wiser, having never handled the Lumia that started it all.

### A BODY THAT WAS ONCE SMOOTH AND POLISHED HAS GROWN ROUGHER IN ITS JOURNEY ACROSS THE ATLANTIC.

For the most part, Nokia's kept the general layout of the buttons and ports intact. The volume rocker, power button and dedicated camera keys still lie along the right-hand side of the device, leaving the opposite edge clean. Thankfully, though, these flush, metal buttons have benefited from a little tightening — they feel more rigid than the ones on the 800, and you won't encounter any loosening or jiggle. At the base, the speaker melds beautifully into the polycarbonate hull, making hand obstruction unlikely. Meanwhile, uncovered ports for a 3.5mm headphone jack and micro-USB socket sit up top.

The unit's micro-SIM can also be accessed here. However, Nokia retooled the device so that you no longer have to depress, flip and then slide out that slot's flimsy drawer. Instead, there's an included door key that, when inserted, causes the sealed tray to pop out. SIM-

swappers might take issue with this admittedly inelegant solution, as it'll force them to keep vigilant watch of an easily lost sliver of metal. To that end, we'd advise prospective owners to keep a host of pins at the ready.

Flip the phone on its face and you're met with a uniquely contoured back, broken only by a metallic ellipse housing an 8-megapixel shooter with a f/2.2 Carl Zeiss lens and accompanying dual LED flash. In a remarkable show of restraint, AT&T kept its logo-happy paws off, allowing users to revel in the 900's naked beauty. The camera module should trigger some *déjà vu*: you've seen it not once, but twice, in the N9 and Lumia 800. A tour of the device's front finds a VGA camera, ambient sensors, a trio of capacitive Windows Phone buttons and the only instance of branding — double billing for Nokia and AT&T.

For top-shelf phones, an HD display has become a must, be it qHD or 720p — just look at the Galaxy Nexus or HTC One X. Sadly, fans of the Windows Phone experience have had to make do with a software-dictated resolution cap of 800 x 480 — a frustrating limit that on paper, at least, keeps even the worthiest Mango handsets positioned below other flagships.

Still, with the inclusion of Nokia's ClearBlack AMOLED display tech, prospective owners will be treated to an incredibly bright and intensely saturated screen that's refreshingly liberated from the 800's PenTile trappings. Even when viewing it outdoors in direct

PERFORMANCE BENCHMARKS	NOKIA LUMIA 900	SAMSUNG FOCUS S	NOKIA LUMIA 800	HTC TITAN
WP Bench	92	91.54	86	96
Battery rundown	4:29	4:24	2:40	3:00
SunSpider 0.9.1 <sup>1</sup> (ms)	6,902	6,914	7,200	6,500

Notes: <sup>1</sup> Lower numbers are better

sunlight, we had no difficulty discerning the contents of our live tiles or even the camera interface. Granted, we had the brightness cranked to the max, but contrast this readability with the high level of glare commonplace on competing handsets and you should be able to overlook the Lumia 900's graphical shortcomings. Truly, the simplicity of the Windows Phone UI — specifically the undemanding design of its icons — works well within these constraints. It's only when you visit image-heavy websites or attempt to view the shots in your photo library that this pitfall becomes impossible to ignore.

## Performance and Battery Life

Windows Phone Mango, as we've said again and again, is an operating system constrained by an unfortunate combination of inflexible spec requirements. To know its ease of use is to love it, but that clean UI comes at a single-core price. True, WP handsets with beefier CPUs are reportedly in the pipeline, though what they are and when they'll launch is anybody's guess. For the time being, we must contend with the 900's 1.4GHz Snapdragon processor and 512MB of RAM, neither of which should be underestimated.

That preamble aside, the Lumia 900's performance is remarkably smooth. Note we didn't say fast — not that it doesn't display considerable speed when piloting through its live tile homescreen or app list. No, it's definitely speedy, but there's no arguing that the handset moves at its own fluid pace. It appears as if all WP navigation takes on a consistent cadence; it's a UI that favors the charm of its animations over the immediacy of loading applications. Oddly, too, though it consistently scores higher than the Lumia 800 in benchmarks, it feels like it's operating at a more leisurely pace: it doesn't launch apps quite as promptly, and scrolling isn't as brisk. Where that more diminutive phone zips, this one floats. It may frustrate users accustomed to lightning-quick smartphone responses, but eventually the 900's flow wins you over until you completely forget it was a distraction in the first place.

Stacked up against its WP comrades old and relatively new, including mid-rangers and high-end handsets, the 900 disappoints. With a middling SunSpider score, a WP Bench result that fails to best last year's Titan and battery life on par with Samsung's (non-LTE) Focus S, the 900 safely earns the underachiever

crown. It's disheartening to see this highly anticipated phone fall prey to whatever discord resulted from AT&T, Nokia and Microsoft's combined software broth.

## **NOKIA'S IMAGING KNOW-HOW ELEVATES THIS DEVICE BEYOND ITS WORKHORSE PERFORMANCE AND INTO A REALM THAT QUITE NEARLY RIVALS THE HEIGHTS ATTAINED BY SAMSUNG'S GALAXY S II AND APPLE'S IPHONE 4S**

Web browsing on the Lumia 900 is handled well by the native Internet Explorer app, although, as highlighted by its Sun-Spider score, full desktop pages can take some time to fully render — about 30 seconds on average. We pulled off pinch to zoom without a hitch, with no white spaces or checker-boarding.

It was Andy Lees, Microsoft's former Windows Phone chief, who claimed late last year that the company's resistance to issue LTE-capable handsets stemmed from a desire to create longer-lasting, more power efficient handsets. Remember the Thunderbolt? Apparently, so does Redmond, and although that particular misstep belonged to HTC, Android and Verizon, the lesson was not lost on the WP team. Determined to vault past criticism of releasing devices ill-equipped to handle the demands of AT&T's 4G LTE network, the Lumia 900 hits shelves with a 1,840mAh battery in tow. Sounds like it would be enough and it is... just enough.

Compared to all the Lumias that have come before it, the 900's charge does nearly double duty, holding on a respectable four hours and 29 minutes. That's still hardly impressive, of course, but bear in mind that this was with a video playing in an incessant loop. Under the duress of real-world usage — that's with the brightness at its medium setting, Twitter set to sync at 15 min, one push mail account and GPS and WiFi connected — we were able to squeeze just about two full days from one charge. Make use of Mango's battery saver settings and we're convinced moderate to light users will enjoy nearly 72 hours of productivity.

### **Camera**

Like a beacon of hope shining in the midst of this less-than-perfect storm comes the Lumia 900's 8-megapixel rear shooter. Nokia's imaging know-how, cemented in the outing of its 41-megapixel 808 PureView, elevates this device beyond the flavorlessness of its workhorse performance and into a realm that quite nearly rivals the heights attained by Samsung's Galaxy S II and Apple's iPhone 4S. Imbued with the same f/2.2 Carl Zeiss lens outfitting both the N9 and 800, the 900 should delight novices and pros alike with an intelligent sensor capable of arrestingly vivid images. Hold down the dedicated camera key and you'll wake the phone from sleep directly to the camera app — a handy shortcut when photographic inspiration unexpectedly strikes. And while the shutter can easily be triggered by the



SAMPLE  
IMAGES

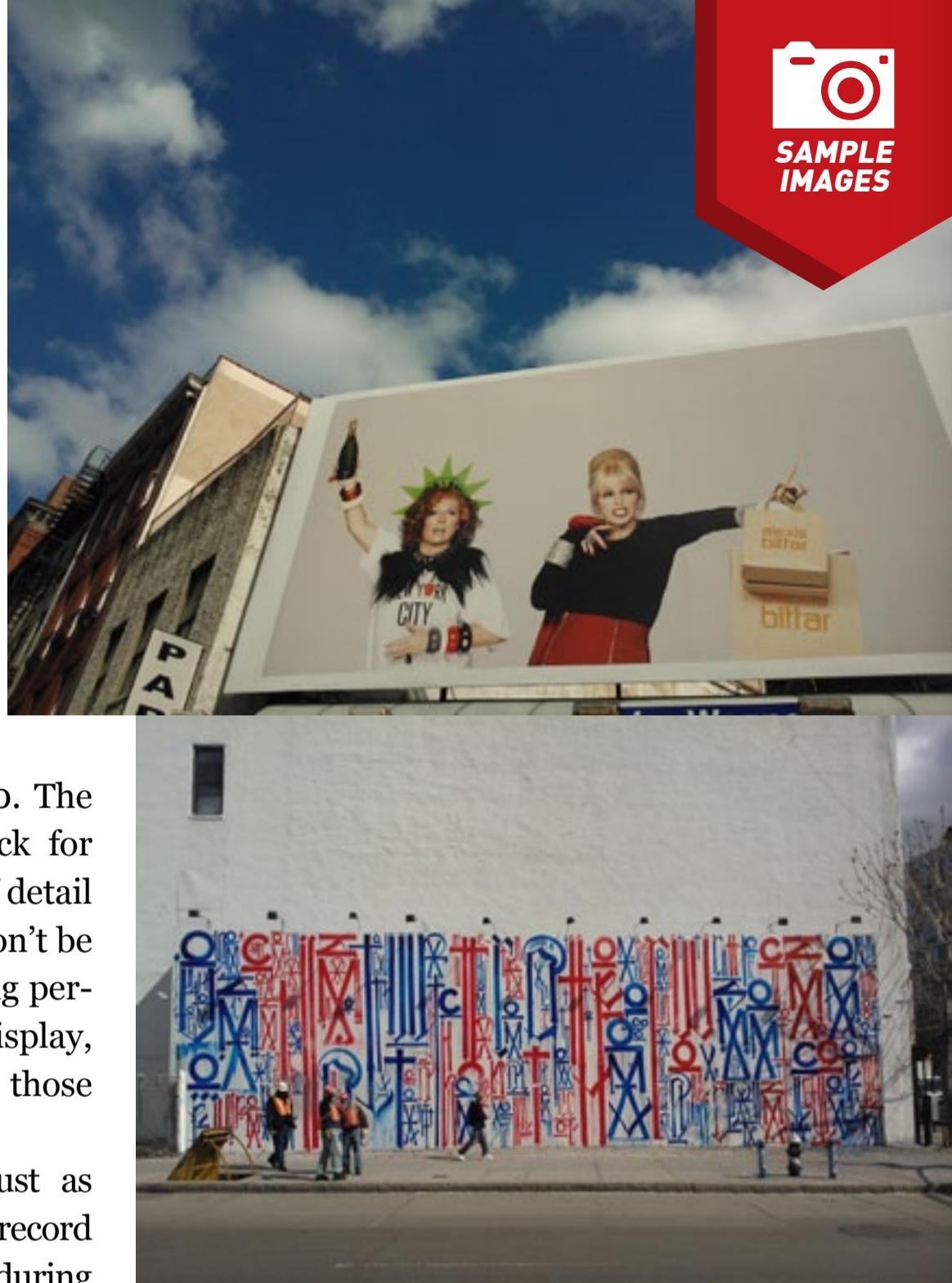
same hardware key, you can also tap onscreen, hold to focus and snap, allowing the sensor to adjust for the scene, white balance, ISO and exposure. Or you can manually tweak these settings, as well as swap out the 4:3, 8-megapixel resolution for 16:9, 7-megapixel shots.

The 900's imaging software doesn't quite match the superior optimization on the N9, but it certainly outranks the 800. The phone's module displays a knack for depth of field, crisp replication of detail and balanced color. While you won't be able to appreciate this astonishing performance on that 800 x 480 display, you'll sit back and smile when those pics stream across your desktop.

Video on the 900 performs just as admirably, with the phone set to record at 720p. A few hiccups did surface during playback — you'll notice the sensor occasionally adjust the focus as we pan 180 degrees. Audio clarity also suffers slightly, but we'll chalk that up to the high winds howling in the background as we filmed.

## Software

Users familiar with Mango's underpinnings can move along — there's nothing new to see here. But even as Tango's suite of UI improvements wait in the wings, prospective Lumia 900 owners can still savor this older, slightly overripened software. Clean design abounds in this mobile phone OS for dummies — and that's a compliment. From the



wide-blocked live tile homescreen to the easily accessible and alphabetically categorized app menu, all the complicated and unnecessary bits that would confound the less nimble smartphone user are tucked out of sight. All told, the experience is amazingly intuitive and fluid, as we've said before, though it could frustrate power users with its lack of personalization options.

To Microsoft's credit, the 900 never lags or stutters, defaulting instead to that measured, graceful flow we described earlier. Certain applications load appreciably quicker than others, particularly

native ones, but thanks to that pristine, visual uniformity decreed by Microsoft, even the slowest of apps manages to dazzle. Gone, too, are the days when WP critics could deride Redmond's smartphone ecosystem for a paucity of these pinnable tiles, as there are now over 40,000 apps available in its US Marketplace. Nokia and AT&T have done their best to tread lightly with the bloat, choosing to pre-load the Lumia 900 with only a dozen applications, like Code Scanner, myWireless, U-Verse Mobile, Xbox Live, ESPN, Tango and Maps. Blessedly, 80 percent of these are removable, so while this handset may ship with a plump software load, users at least have the option to clean it up and make the most of that allotted 16GB of storage.

In a welcome turn of events, Nokia is also releasing the 900 to the public with Internet Sharing enabled from the outset; an option that was sorely missing on T-Mobile's Lumia 710 and the unlocked 800. So, if you decide to opt in for this handset and happen to call one of AT&T's 4G LTE or HSPA+ coverage areas home, you should have no problem tethering to your laptop and enjoying the freedom of a true mobile hotspot — your data plan, willing.

## Network

This is Windows Phone's first dance with LTE and, despite being late to the ball, the Lumia 900 still gets to surf along those radio waves — they're just no longer as incredibly blazing. Speeds have diminished somewhat since AT&T's 4G LTE network officially launched in New York



City. Considering performance consistently maxed out at about 21Mbps down and 8Mbps up, users won't have much to gripe about, with typical downlink results ranging between 17Mbps to 20Mbps and uplink at 5Mbps to 7Mbps, perfect for streaming Netflix or sharing large files over SkyDrive. Default to an HSPA+ only zone and those downlink speeds will hover around 5Mbps to 8Mbps.

## Wrap-Up

Windows Phone fans have waited with bated breath for the Lumia line's "true" stateside debut. Standing tall with a 4.3-inch display and being the first of Nokia's brood to boast LTE connectivity, the 900 is the company's call-to-arms, a mid-range contender crafted with a single-minded mission: shore up the gaps left by the lesser 800 and 710 and establish a brand presence. Those handsets, for all their good looks and performance strengths, were more mobile welterweights than anything else: they aimed too low and too wide to capture the public imagination.

This Lumia, though, was supposed to change all of that, backed by a considerable marketing push and higher-end ingredients. While we wouldn't color this as a failure, we wouldn't call it a crowning achievement either. Apart from a stated preference and dedication to Windows Phone, savvy geeks won't necessarily want what the 900 has to offer, especially in light of that other spotlight-stealing flagship, the One X. By no means are these phones on equal footing. It's just that Nokia may have shot itself in the foot, succumbing to the hazards of hyperbolic quicksand far ahead of launch day. However, the Lumia 900 has its strengths, coming mainly in the form of optics, but it's the overall package and performance that's simply too plain, too ordinary, too dependable to merit the haughty flagship halo it aspires to emanate.

In that context, the Lumia 900 comes off as yet another decent offering on AT&T's increasingly bountiful LTE lineup. Dispense of Espoo's rose-colored glasses and the case for this middle of the road Lumia becomes somewhat clearer. Filter out the marketing noise and focus on its superb performance as a reliable point-and-shoot and now you've got a winner. Toss in those considerable network speeds and default access to Internet Sharing and, suddenly, it's a shining star. Sprinkle all of that with an attractive polycarbonate case, a saturated and legible display and the magic eraser of its \$99 on two-year contract pricing and, ipso facto, you've got a no-brainer purchase staring you in the face. Does the

Lumia 900 fail to find its place amongst other smartphone hulks? Well, yes. But again, it's playing in a league of Windows Phone's single-core own. With the careful cultivation of a cultish, fashion-conscious consumer following, however, this could very well be Nokia's greatest hit. □

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*Joseph Volpe is ambiguously ethnic. He is also an Associate Editor at Engadget.*

## BOTTOM LINE

### Nokia Lumia 900

# \$99 on contract

#### PROS

- Solid camera
- Fluid user experience
- Blazing LTE speeds
- Useful Internet Sharing feature
- Screen is easily readable outdoors

#### CONS

- Low-res display

**Nokia's Lumia 900 is a steal for consumers looking for dependable performance, ease of use, LTE connectivity, an attractive design and reasonable price.**

# >> IN REAL LIFE

Welcome to IRL, an ongoing feature where we talk about the gadgets, apps and toys we're using in real life and take a second look at products that already got the formal review treatment.



# Evernote, Netgear N900 and FiiO's E17 Headphone Amplifier

BY ENGADGET STAFF

**Best of the best,** best of the worst and best thing we didn't need. Those are some ringing endorsements we've got for you in this week's IRL. On the more enthusiastic end of the spectrum there's Darren, who finally found a dual-band router with strong enough range to service all three floors of his new home. Terrence is closing in on his

fourth year using Evernote, the “least bad” note-taking app of the bunch. As for James, well, has he ever met a piece of audio equipment he didn't like?

## Evernote

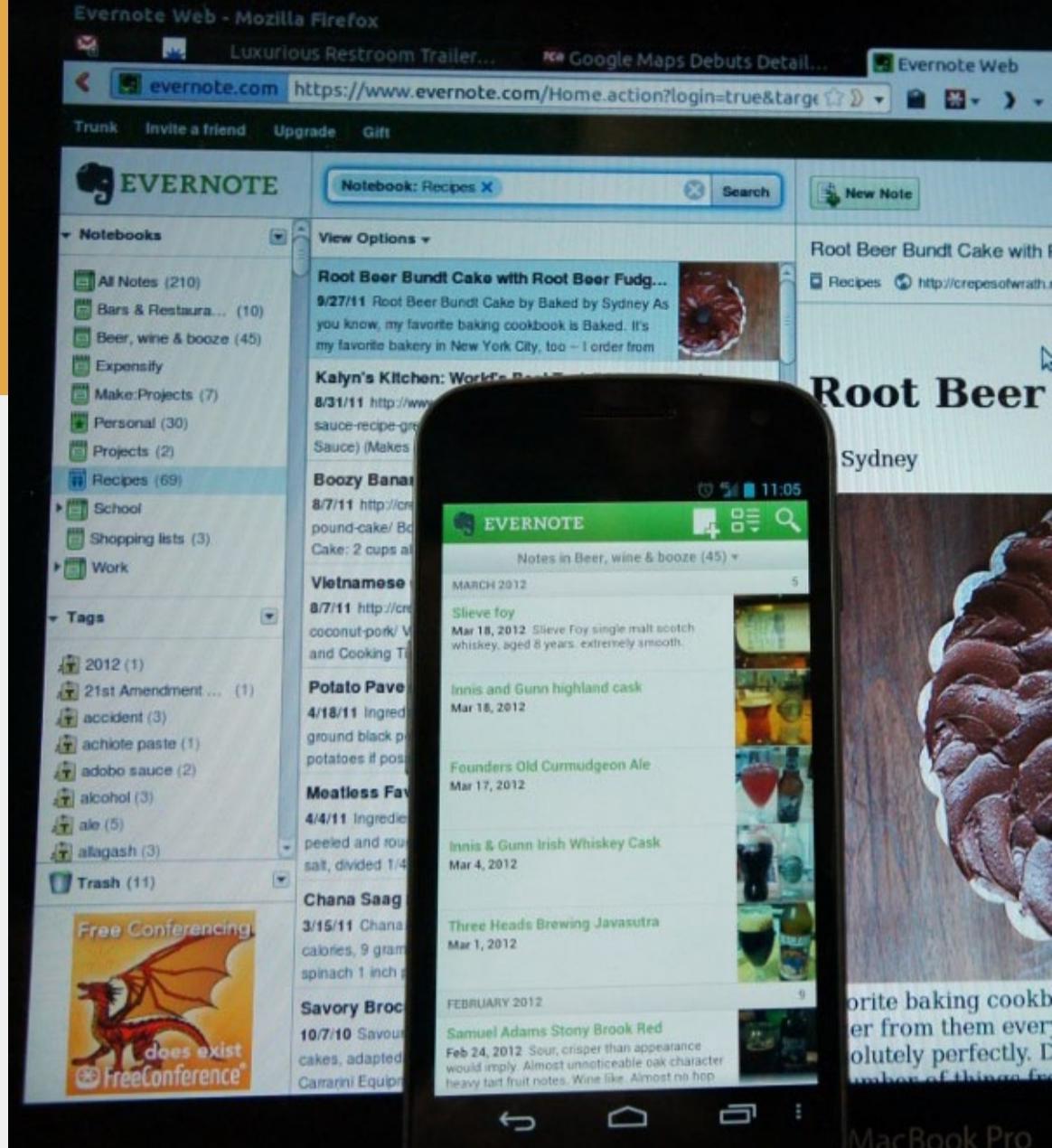
Digital note-taking apps are a dime a dozen, and I've tried a pretty good chunk of them. Simplenote (in conjunction

with Notational Velocity and ResophNotes), OneNote, Tomboy, Zim, Springpad... they've all left me feeling a little meh. Eventually, after plenty of soul searching, I settled on Evernote. When I first signed up for the service, shortly after the beta launch in 2008, I primarily used it as a recipe book. Even to this day I still dump directions for whipping up tasty meals into my online repository. This is how I discovered Evernote's sheer power. As I started collecting dishes, I tagged them by cuisine, course, dish type and ingredients, allowing me to quickly figure out what I could make based on what was available in my refrigerator, or narrow down my choices if I was in the mood for soup.

Part of the reason I made the jump to Evernote full-time after using it in conjunction with Simplenote was the top-notch Android app. Don't get me wrong, the iOS version is pretty good and the

desktop clients are undeniably awesome, but the widget is what makes this a killer tool for capturing info. With a single tap I can snap a pic of the newest beer to grace my palate, take some notes and tag it with the style and brewery.

But I don't want to get too wrapped up in singing its praises. The omission of a Linux app, a painfully slow web interface and the lack of free offline access on Android irk me more than a little. And it still isn't an ideal solution for quickly making or updating lists. Sadly, I don't actually feel like I've landed on the perfect note-taking solution; it's more that I've accepted defeat and settled for the least bad option. Maybe it's time to pay more attention to that Moleskine I splurged on. — Terrence O'Brien





## FiiO E17

I ditched any semblance of a normal audio setup a long time ago. As a result, my poor girlfriend can't just switch on the radio, or play a CD — she has to navigate a world of DLNA, media centers and WiFi. Needless to say, then, any audio toy I can get my hands on, I likely will. Enter the FiiO E17 DAC / headphones amp. Do I need one of these? Probably not, but that stopped being a major factor of purchasing decisions some time ago.

The E17 (or Alpen, as it's also known) looks very much like an exquisite MP3 player with its luxurious brushed metal finish, crisp LED display and tactile buttons. None of this matters

one jot, however — not even the cute dual-color ring that lights up around the power button. What does matter is that it sounds great. Over USB you'll get 24 bit / 96kHz of *slightly* warm loveliness. If you're using the SPDIF, you can go all the way up to 192 kHz, and why the heck not!

I could probably spare myself the extra gadget in the chain for the majority of my listening, but there is definitely a satisfaction to be gained from plugging into this little fella, and watching it sit there motionless, feeding your ears thanklessly. The fact that I was looking for something to justify a new pair of over ear headphones is beside the point.  
— James Trew

# 3

## Netgear N900

Routers. Even the thought of buying a new one is daunting, even for someone that's toyed with just about all of them. If you're in the market for one, and you need insane range, I'd encourage you to stop hunting. Netgear's dual-band N900 is — without question — the most impressive wireless router I've ever had the pleasure of using. I recently relocated, and due to the amount of space between the top floor and lower floor of my new abode, I went through *three* routers that simply wouldn't broadcast wireless waves throughout the place.

Then, I tried the N900. At all points in my home, I can latch onto a 2.4GHz signal. As you'd expect, the 5GHz waves peter out when you get more than a



hundred or so feet away from the base station, but for keeping my Wii connected downstairs and my wireless printer online in the upper regions, the N900 excels.

In four months of use, I haven't had to reboot it once. That's pretty impressive. It also features a fairly useful admin panel, including a notification option that'll ping you when you're approaching your monthly bandwidth limit (yeah, some of us have those). At \$160-plus it ain't cheap, but it's far better than buying a lesser router and a flaky extender. — Darren Murph □



# JARED POLIN

JARED POLIN OF **FROKNOWSPHOTO** TAKES TIME OUT FROM SCHOOLING WANNABE PHOTOGS TO DISCUS HIS LOVE FOR iJUSTINE AND LUSTING AFTER A RED EPIC.

**Q&A**

**What gadget do you depend on most?** My iMac 27-inch. It is the tool that allows me to edit my photos and videos and bring my creations to a worldwide audience.

**Which do you look back upon most fondly?** The very first computer I purchased with my bar mitzvah money. My custom built 486 DX66 tower with 320-meg hard drive, 1x CD-ROM drive and, get this — wait for it, wait for it... eight megs of RAM, upgraded from two!!!! This was either really good or really bad for me. It introduced me to the world of AOL and being social, but not the real world. In those days, 1994, we were limited to 20 hours a month before our parents had to pay for more time.

**Which company does the most to push the industry?** Apple innovates and others do one of two things: they try to copy or they adopt and become part of the eco system, creating products and apps.

**What are your favorite gadget names?** That's easy, it's iJustine — wait, she's not a gadget. I loved the name Rio Riot, it just sounds good. The Flobee, or however it was spelled. It sucked and it cut, though I have not had a hair cut in over four years.

**What are your least favorite?** This is simple: anything that Apple doesn't make that puts an 'i' in front of itself, except iJustine. Canon 5D Mark anything. Why does

it need to say "Mark" in it. While I am on Canon, I will go ahead and say the way they name their lower-end cameras. In one country it's a T2i, in another it's the ESO 500D — confusing much?

**Which app do you depend on most?** I would have to say Adobe Lightroom. Without Lightroom how in the world would I be able say "I Shoot RAW?" I depend on Lightroom to allow me to process all the RAW files since 2004.

**What traits do you most deplore in a smartphone?** This is funny because anyone who deplores these amazing devices should remember the days where we actually called people on our phones. I am sure there are things I don't

# I would have to say a RED EPIC!!!! The name says it all: it's RED and it's EPIC.

like, but I try to remind myself that this tool is so much better than my first phone that had physical buttons — that I had to type in a number to call someone because it did not have a memory.

**Which do you most admire?** The fact that I can stay “connected” with just about anything from my phone. I pretty much can run the day-to-day of my business from my iPhone.

**What is your idea of the perfect device?** If I tell you will you go ahead and build it? Let’s go down the road of a device that is geared for photography. I would say something like an iPhone that plugs into my Nikon that stores the images or videos I capture then allows me to edit the RAW files and video, back them up to the cloud, then send them off to a client who then sends money to my PayPal account. NO, skip the PayPal and go right into this amazing phones account!!!

**What is your earliest gadget memory?** I have to go back to the handheld Mattel basketball game. My brother and I would fight in the back seat of my Dad’s grey station wagon to see who would get to play first. This was somewhere around 1984 to 85, which would have made me about 4 years old. I can vividly remember this buzzing sound that the game always made until my mom would hit the silence button.

There was nothing like watching those little dots move around

a screen and somehow the ball ended up in the basket.

**What technological advancement do you most admire?** I have to say wireless technology. The fact that data can fly around and be picked up by something and then processed to resemble whatever it is is just amazing. If you go beyond that, the fact that processors can do tasks that are programmed and the fact that a human had to write the first program is just mind-boggling.

**Which do you most despise?** I despise TXT messages. They have become a way for people — and when I say people, I mean girls I am trying to go out with — to tell me they are not interested. That’s if they respond in the first place!!!

**What fault are you most tolerant of in a gadget?** I am really racking my brain for this one. I don’t think I am very tolerant of anything in a gadget, I expect it to just work at this point.

**Which are you most intolerant of?** Slow slow slow download speeds. There is nothing worse than sitting there Friday morning with no one around trying to get Rebecca Black’s *Friday* to play in the office!!!

**When has your smartphone been of the most help?** When the power goes out and it’s the last thing that can connect you to the “real

world,” by real I mean “online.”

**What device do you covet most?**

ANSWER

**If you could change one thing about your phone what would it be?** I would change the fact that if I drop it it will crack. So a phone, that when dropped, will not break, ever!!!

**What does being connected mean to you?** Being connected means that I am always a click away from something, anything. Beyond that, at this point in my life, being connected means I can continue to bring content to my readers or sit back and answer their questions. It means at 2AM I can get onto Spreecast and have 50-100 people join me on camera to just talk about anything.

**When are you least likely to reply to an email?** When I am sleeping, though I do have an auto responder that is always sending out emails. Beyond that, in an airplane that does not have WiFi.

**When did you last disconnect?**

The last time I disconnected was when I went to Israel for three weeks without an international data plan. I think disconnecting went out the window with the introduction of the original iPhone. □

**Q&A : Jared Polin**

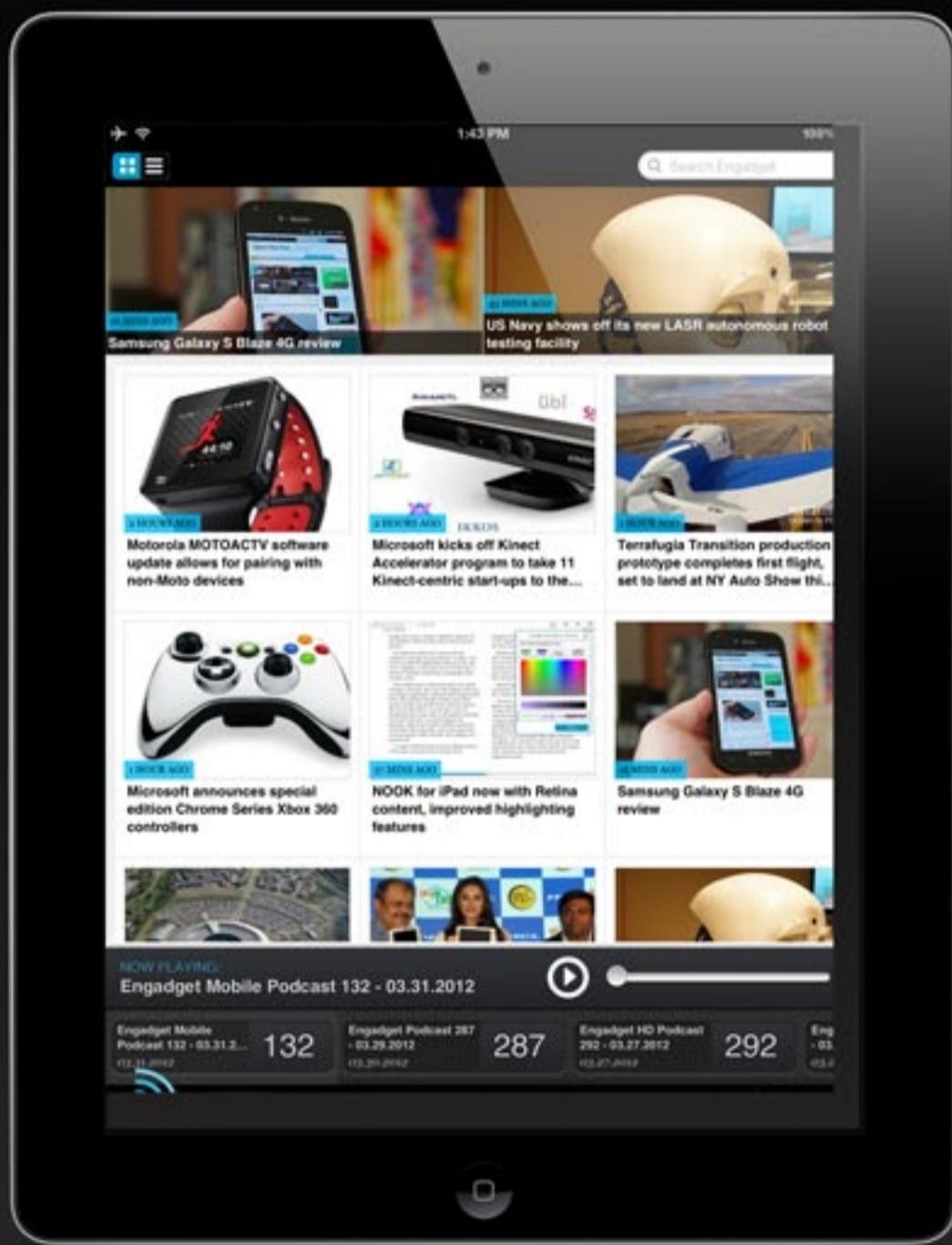
# THE APP IS CALLING FROM INSIDE THE HOUSE!



*The Last Word - Dustin Harbin*

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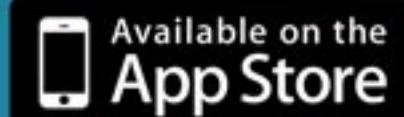
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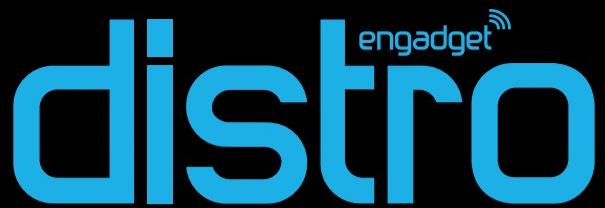


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